EMPLOYEE SAFETY & HEALTH MANUAL

COMMONWEALTH OF KENTUCKY
TRANSPORTATION CABINET

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PURPOSE

The Occupational Safety and Health Act (OSHA), enacted in 1970, requires employers to furnish employees a place of employment free from recognized hazards that are causing or likely to cause death or serious physical harm.

The Commonwealth of Kentucky has adopted the OSHA program—known as the Kentucky Occupational Safety and Health (KOSH) Program.

The goal of the Division of Employee Safety and Health is to ensure that a safe and healthful work atmosphere is provided for Transportation Cabinet employees by implementing and enforcing safety and health standards. Implementation and enforcement will include, but not be limited to, statistical analyses, safety programs, inspections, investigations, and employee training.

The intent of this manual is to familiarize Cabinet employees with the safety and health program and to point out their roles and responsibilities, as employees and supervisors, in the prevention of accidents and injuries.

INTRODUCTION

0.1 FROM THE SECRETARY

Safety plays a vital role in the morale and productivity of our work force as well as the overall quality of our products. Our role is clear. Occupational safety and health should be a part of every employee's overall job performance. It is incumbent upon managers and supervisors to promote the Cabinet's many safety programs and to ensure that safety is made an integral part of all workplace operations. Reductions in incidents, injuries, and claims for workers' compensation are priorities that demand immediate and vigorous efforts.

As the Kentucky Transportation Cabinet moves forward with its goal of improving the infrastructure of the Kentucky highway system, we must also actively fulfill our responsibilities in occupational safety and health. Creating and maintaining a sound organizational safety culture is essential to the well-being of our employees. Only through leading by example and taking a proactive role will we achieve a world-class organizational safety culture.

To accomplish our goals, we must endeavor to make safety and health a top priority in the workplace. Management must provide the leadership to encourage, enable, and empower employees to become increasingly active in areas concerning workplace safety and health. Through increased accountability and leadership, we will accomplish our goals.

As Secretary, I ask all Cabinet employees to work together to make the Kentucky Transportation Cabinet a safe and healthful workplace.

0.2 RESPONSIBILITY

KRS Chapter 338.031 Obligations of employers and employees. (adopted from the *Federal Register*, General Duty Clause)

"(1) Each employer:

(a) Shall furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees;

(b) Shall comply with occupational safety and health standards promulgated under this chapter.

(2) Each employee shall comply with occupational safety and health standards and all rules, regulations, and orders issued pursuant to this chapter which are applicable to his own actions and conduct."

INTRODUCTION

Hazard Prevention and Control Responsibilities

The Cabinet shall initiate and maintain hazard prevention programs. Redesigning the work activities often can eliminate workplace hazards. If hazards can not be eliminated, hazards must be controlled to prevent unsafe and unhealthy exposure. Control procedures consist of engineering techniques, administrative controls, work practice controls, and personal protective equipment.

Any machinery, tool, material, or equipment that is not compliant with OSHA standards covering recognized hazards is prohibited. Such machinery, tool, material, or equipment either shall be identified as unsafe by red tagging or locking the controls to render them inoperative or shall be physically removed from its place of operation.

The Cabinet shall establish programs for the education and training of supervisors and employees in the recognition, avoidance, and prevention of unsafe conditions within the workplace. The Cabinet shall permit only those employees qualified by training or experience to operate equipment and machinery.

Such programs shall provide for frequent and regular inspections of all facilities, jobsites, materials, and equipment to be made by competent persons.

The purpose for conducting safety and health inspections is to evaluate compliance with OSHA standards and Cabinet policies, procedures, and work practices. The inspections will substantiate the supervisor's effectiveness in providing a safe and healthful workplace.

The review's primary focus is to provide management with feedback regarding whether desired results are effectively achieved and to assist supervisors in carrying out their responsibilities.

The safety and health inspection is designed to:

- Examine the supervisor's records
- Verify the supervisor's compliance with the Cabinet's safety program
- Provide ongoing audit assurances the supervisor is fulfilling his or her responsibilities
- Provide direction and technical support to the supervisor as a basis for future audits and training

0.2.1 DIVISION OF EMPLOYEE SAFETY AND HEALTH

The responsibility for developing and administering the Cabinet's safety and health program is assigned to the Division of Employee Safety and Health.

0.2.2 EMPLOYEE RESPONSIBILITIES

Cooperation in the safety and health program and observance of all safety and health rules are obligations of each employee.

Each employee shall:

- Adopt the recommended safe procedure as the best procedure and have regard at all times for the safety of fellow employees and the public
- Report unsafe equipment and working conditions to the immediate supervisor
- Contribute ideas and suggestions for improved safety practices
- Wear required personal protective equipment for the job being performed
- Not engage in horseplay or any behavior that may result in injury
- Not be under the influence of or use drugs or alcohol
- Read and comply with *Employee Safety and Health Manual*

0.2.3 SUPERVISOR RESPONSIBILITIES

Each supervisor shall:

- Implement a safety and health program within area of responsibility
- See that employees obtain the necessary information and training to safely do their jobs, and give detailed instructions on safety procedures when an employee is assigned an unfamiliar job
- Report defective equipment to the appropriate authority

  NOTE: No equipment is to be used when it is in such condition that it constitutes a hazard to any employee or to the public or when the continued use of the equipment may cause further damage to the equipment itself.

- Analyze and plan work in advance to determine the safest, most economical way to proceed and determine the physical protection necessary to do the work
- Select and assign workers sufficiently qualified to do the job at hand in a manner that will be safe for employees and the public
- See that regulations of the Cabinet are followed at all times, except when compliance with a particular regulation might constitute a greater hazard

  NOTE: When any exception is taken, the responsibility for the exception rests directly with the supervisor.
- Report unsafe conditions through the chain of command and, if possible, correct them immediately
- Read and comply with *Employee Safety and Health Manual*, and ensure that all supervised employees understand and adhere to safety and health requirements

0.3 CITATIONS

Should any unit within the Transportation Cabinet be inspected by the Kentucky Labor Cabinet, or other state or federal agencies, the Division of Employee Safety and Health will be notified immediately. Fines, abatement, corrective actions, and all necessary paperwork will be the responsibility of the district or division receiving the citation. All communications and correspondence, however, will be reviewed in advance by the Division of Employee Safety and Health.

0.4 DEFINITIONS

- **ANSI—**American National Standards Institute
- **Competent Person**—A person who, because of training, expertise, or experience, is capable of identifying hazardous conditions and has the authority to take corrective action
- **Incident**—An unplanned result of an act or event that can be a fatality, injury, or property damage
- **Jobsite**—The area within right-of-way limits used in carrying on job activities, such as construction, maintenance, and traffic or “lots” for maintenance, traffic, equipment, bridge crew headquarters, roadside development, etc.
- **May**—A permissive condition

- **Shall**—A mandatory condition

- **Should**—An advisory (recommended) condition

- **Supervisor**—When the word is used in this manual, it shall refer to any Cabinet employee, including Central Office personnel, who has authority over other Cabinet employees. It shall include first-line supervisor, second-line supervisor, manager, crew leader, or other persons of responsible charge. A variety of classifications, working titles, and technical assistance advisors may not be designated as supervisory but are still responsible for carrying out all elements of Cabinet policy, which include enforcing safety and health policies and work practices.

Chapter 1
FIRST AID

1.1 INTRODUCTION

This chapter describes the signals for and treatment of basic injuries and illnesses that could occur in the workplace.

Life-threatening conditions must be treated first. Any person severely injured may develop shock. Treatment must start immediately, without waiting for symptoms to develop.

1.2 GENERAL INSTRUCTIONS

1. Check the victim and the scene.
2. Call **911.**
3. Start appropriate treatment.
4. Do not move the victim unless the scene becomes unsafe.

1.3 BLEEDING (External)

1. Control bleeding by placing a sterile dressing over wound and applying pressure.
2. If possible, elevate wound above level of heart.
3. Cover dressing with bandage.
4. If bleeding continues, apply pressure to pressure point.
5. Seek medical assistance.

1.4 CHOKING (Conscious Victim Only)

1. From behind, place thumb side of fist against middle of abdomen above navel. Grasp fist with other hand.
2. Give quick upward thrusts.
3. Repeat until object is dislodged or person becomes unconscious.

1.5 FRACTURES, DISLOCATIONS, AND SPRAINS

1. Support injured area above and below injury site.
2. Check for feeling, warmth, and color.
3. Immobilize body part above and below injured area.
4. Recheck for feeling, warmth, and color.
5. Apply cold compresses to reduce swelling and pain.

1.6 SHOCK (Traumatic)

Shock is a life-threatening condition in which not enough blood is being delivered to all parts of the body.

A. Signals

- Restlessness or irritability
- Nausea and vomiting
- Altered level of consciousness
- Pale or ashen, cool, moist skin
- Blue tinge to lips and nailbeds
- Rapid breathing and rapid pulse

B. Treatment

1. Call **911.**
2. Control any external bleeding.
3. Keep the victim from getting chilled or overheated.
4. Elevate the legs about 12 inches if a head, neck, or back injury or broken bones in the hips or legs are not suspected.
5. Comfort and reassure the victim until advanced medical personnel arrive and take over.
6. **Do not give food or drink to the victim.**

1.7 FROSTBITE

Frostbite is produced by freezing a part of the body. Nose, ears, fingers, cheeks, and toes are most often affected.

A. Signals

- Loss of feeling and sensation in the extremity
- Discolored, waxy skin appearance
- Blisters and blue skin (if severe)

B. Treatment

DO:

1. Remove wet clothing and jewelry from the affected area
2. Soak the frostbitten area in warm water
3. Cover area with dry, sterile dressings, but do not rub anything on the area
4. Care for shock

DO NOT:

- Rewarm a frostbitten area if there is a danger of it refreezing
- Rub the area
- Apply direct heat from stove or heat lamp
- Break the blisters
- Apply ointments

1.8 HYPOTHERMIA

Hypothermia is a life-threatening condition that occurs when the entire body loses ability to warm itself.

A. Signals

- Shivering
- Slow, irregular pulse
- Numbness
- Glassy stare
- Apathy or impaired judgment
- Loss of muscle control, no shivering, or loss of consciousness (late stages of hypothermia)

B. Treatment

1. Call **911.**
2. Gently move the victim to a warm place.
3. Care for shock.

4. Remove wet clothing, and cover the victim with blankets and plastic sheeting to hold in body heat from shivering.

5. Warm the victim slowly, and handle the victim carefully.

1.9 HEAT CRAMPS

A. Signal

Painful muscle spasms, usually in the legs and the abdomen

B. Treatment

1. Move the victim to a cool place.
2. Give cool water to drink.
3. Have the victim lightly stretch the muscle and gently massage the area.

1.10 HEAT EXHAUSTION

A. Signals

- Cool, moist, pale, flushed, or ashen skin
- Headache, nausea, dizziness
- Weakness, exhaustion

B. Treatment

1. Move the victim to a cooler environment.
2. Loosen or remove clothing.
3. Fan the victim.
4. Move the victim into circulating air while applying water with a cloth or sponge.

5. If the victim is conscious, give small amounts of cool water to drink.

6. If the victim's condition does not improve or if you suspect heat stroke, call **911.**

1.11 HEAT STROKE

Heat stroke is an immediate, life-threatening emergency for which medical care is urgently needed.

A. Signals

- Change in the level of consciousness
- High body temperature
- Red, hot skin that can be either dry or moist
- Rapid or weak pulse
- Rapid or shallow breathing

B. Treatment

1. Call **911.**
2. Give care until help arrives by following the care steps above for heat exhaustion.

1.12 POISONING

Call Poison Control at **1-800-722-5725.**

1.13 POISON IVY

Some of the most common and severe allergic reactions result from contact with plants of the poison ivy group. Ordinarily, the rash begins within a few hours after exposure but may be delayed for 24 to 48 hours.

A. Signals

- Itching
- Redness
- Rash
- Possible headache and fever

B. Treatment

1. Remove contaminated clothing
2. Wash all exposed areas thoroughly with soap and water.
3. Apply calamine or other soothing skin lotion if rash is mild.

4. Get medical advice if a severe reaction occurs or if there is a known history of previous sensitivity.

Remember: "Leaves of three, let them be!"

1.14 BURNS

A burn is an injury that results from heat, electricity, chemicals, or radiation. A burn may vary in depth, size, and severity.

A. Classification

- First degree—redness (mild sunburn)
- Second degree—blisters and redness (deep sunburn, flash burns)
- Third degree—deep-tissue destruction, charred or white color, complete loss of all layers of skin

B. Treatment

1. Stop the burning.
2. Cool the burned areas.
3. Cover the burned areas with dry, sterile, loose dressings or clean cloth.
4. If severe, call **911.**

1.15 SNAKE BITES

The bite of a poisonous snake is extremely painful and is characterized by rapid swelling of the affected part. If only minimal swelling occurs within 30 minutes, the bite may have been from a nonpoisonous snake.

1. Keep victim calm. Be alert and prepared to treat for shock.
2. Immobilize bitten area, and keep the involved part below the level of the heart.
3. The victim should not walk or try to move unless it is necessary. Do not allow victim to run.
4. Transport the victim to a doctor or hospital as soon as possible.

5. If possible, have someone telephone ahead so that antivenom will be available.

1.16 INSECT STINGS

1. Remove stinger by scraping, not pulling or squeezing.
2. If possible, try to identify insect.
3. Place ice over stung or bitten area.
4. Call **911,** or transport the victim to a doctor or hospital if allergic reactions such as breathing difficulty, facial swelling, hives, nausea, or abdominal cramps occur.

1.17 TICK BITES

There are two ticks common to the Commonwealth of Kentucky: the American dog tick and the lone star (deer) tick. Both ticks are known to carry diseases harmful to humans. The American dog tick transmits Rocky Mountain spotted fever, while the lone star tick transmits Lyme disease.

A. How to Avoid Tick Bites

- Wear light-colored clothing, hat, long-sleeved shirt, and long pants. Tuck shirttail into pants, and tuck pant legs into socks.
- Use insect repellents.
- Check yourself, children (especially head), and pets for ticks after each outing.

B. Treatment

1. Remove tick as soon as possible. Grasp with fine tweezers or thin, curved forceps. Grip as closely to the skin as possible, and gently pull straight out with an even motion. Do not jerk or twist.
2. If you do not have tweezers or forceps, place a paper tissue between your fingers and tick. Afterwards, wash your hands with soap and water.
3. If possible, save tick in tight container for identification.
4. If part of tick remains embedded in skin, contact doctor. If removal was complete and successful, make note of date and location. Contact your physician should illness or skin lesions develop.

DO NOT:

- Attempt to suffocate or cover tick with butter, petroleum jelly, fingernail polish, ointment, gasoline, kerosene, or similar substance
- Burn with lighted cigarette or match

Either of these actions may cause tick to spew bacteria into your body.

1.18 FIRST-AID KITS

First-aid kits are required in all Cabinet facilities and in all trucks. All kits must be fully stocked. Refill supplies may be requisitioned at equipment garages on a separate item basis. Supervisors are responsible for checking kits and keeping them stocked.

NOTE: A fully stocked first-aid kit and a person adequately trained to render first aid shall be present at every jobsite for the duration of the job.

Chapter 2
OFFICE SAFETY

2.1 HOUSEKEEPING

- Keep work areas clean and orderly. Keep aisles, corridors, and stairways clear at all times.

- Always stack material in a manner so that it cannot fall or easily be knocked over. Windowsills, ledges, and tops of cabinets shall be kept free of heavy objects.

- Spilled liquids shall be cleaned up immediately.

- Tripping hazards, exposed nails, loose flooring, raised edgings, splinters, faulty treads or mats, and cords in walkways shall be corrected immediately or reported to the appropriate supervisor for repair.

2.2 PROPER USE OF EQUIPMENT

- Bottom drawers of file cabinets should carry the heaviest loads. Open and close file drawers by using handles. Only one file drawer at a time should be opened. All desk and file drawers shall be closed when not in use.

- Chairs, desks, and cabinets shall not be used as ladders.

- Keep fingers away from point of operation of such tools as staplers, punches, and paper cutters.

- Sharp objects shall be kept in front part of desk drawers where readily visible.

2.3 ELECTRICAL ITEMS

- Machines with belts, gears, pulleys, or rotating parts shall be properly guarded and not cleaned while operating.

- Electrical cords shall be kept in good repair. Cords with frayed insulation or broken ground prongs shall be replaced. Plugs shall be totally enclosed to prevent shock. Extension cords shall be used only in accordance with the rating on the plug.

- Only authorized personnel shall attempt to repair or adjust electrical equipment.

Chapter 3
LIFTING

3.1 INTRODUCTION

Lifting is so much a part of everyday jobs that most people do not think about it. It is often performed incorrectly, with bad results: pulled muscles, slipped discs, or painful hernias.

3.2 GENERAL INFORMATION

- When lifting an object from ground level, keep back as straight as possible, bend knees, and lift with the powerful leg muscles.
- Ask for help when a load cannot be safely handled by one person because of its excessive weight, bulk, or awkward shape.
- Never carry a load you cannot see over or around. Make sure the path of travel is clear.
- To change direction, turn with your feet. Do not twist body.

3.3 LIFTING PROCEDURE (See below for demonstration of **Safe Lifting Basics.**)

1. Set feet should be parted with one foot alongside and one foot behind the object being lifted.
2. Use a "sit-down" position and keep back straight. Straight does not necessarily mean vertical or straight up and down. A straight back keeps spine, back muscles, and internal organs of the body in correct alignment.
3. The load should be drawn close to the body. Arms and elbows should be tucked into the side of the body. Grip object with whole hand, not just fingertips.
4. Tuck chin so neck and head continue the straight line of the back.
5. Use leg muscles to lift—not your back!

Safe Lifting Basics

Before lifting, take a moment to think about what you are about to do. Examine object for sharp corners, slippery spots, or other potential hazards. Know your limit and do not try to exceed it. Ask for help if needed or, if possible, divide the item to make it lighter. Know where you are going to set the item down and make sure it and your path are free of obstructions. Then follow these steps:

Chapter 3
LIFTING

1. **Stand close to load with your feet spread apart about shoulder width, with one foot slightly in front of the other for balance.**

2. **Squat down, bending at the knees (not your waist). Tuck your chin while keeping your back as vertical as possible.**

3. **Get a firm grasp of object before beginning the lift.**

4. **Begin lifting slowly with your <u>LEGS</u> by straightening them. Never twist your body during this step.**

5. **Once lift is complete, keep object as close to body as possible. As load's center of gravity moves away from the body, there is a dramatic increase in stress to lumbar region of back.**

   If you must turn while carrying the load, turn using your feet—not your torso.

   To place the object below waist level, follow the same procedures in reverse order. Remember, keep your back as vertical as possible and bend at the knees.

Chapter 4
FIRE PREVENTION AND PROTECTION

4.1 GENERAL INFORMATION

Fire prevention and protection are the responsibilities of all employees. Every employee shall be aware of evacuation procedures and of the locations of fire extinguishers, alarms, and exit routes in both familiar and nonroutine work areas.

Each facility is responsible for developing and implementing evacuation procedures in accordance with local, state, and federal laws. All supervised employee alarm systems shall be tested at least annually for reliability and adequacy.

Fire and tornado drills shall be conducted at least annually to ensure emergency procedures and systems are adequate and effective.

4.2 FIRE PREVENTION

Good housekeeping and regular fire inspections by designated person(s) are necessary for elimination of potential fire hazards.

Some fire hazards to look for:

- Spontaneous combustion hazards such as oily and greasy rags not in approved containers
- Accumulation of rubbish or trash
- Open containers of flammable liquids
- Flammable materials near heating devices
- Material stacked closer than 18 inches to sprinkler heads
- Welding areas without portable fire extinguishers
- Overloaded electrical circuits
- Misuse of flammable liquids
- Misuse of matches and cigarettes

Where flammable liquids are openly handled, NO SMOKING signs shall be posted.

Vehicles shall be turned off while filling fuel tanks.

Overflow or spills when filling fuel tanks should be prevented.

Gasoline should never be used as a cleaning agent.

All equipment carrying large amounts of flammable liquids shall be equipped with appropriate fire extinguishers (Examples: paint-striping vehicles, oil distributors, refueling trucks).

Approved ventilation systems shall be used, where provided, to prevent accumulation of gases or vapors sufficient to cause flash fire or explosion.

Full oxygen cylinders shall not be stored close to full acetylene cylinders in buildings, unless separated by a fire-retardant wall or by a distance of 20 feet.

Compressed gas cylinders shall not be stored near heat or open flames.

All gas cylinders shall be stored capped, secured, upright, and protected from physical damage.

Propane cylinders shall not be stored indoors. Full or empty cylinders shall be stored outdoors, secured, upright, and protected from physical damage.

4.3 FIRE PROTECTION

Supervisors shall visually inspect all fire extinguishers in their assigned areas each month.

Fire extinguishers shall not be obstructed from view. In locations where obstruction cannot be completely avoided, means shall be provided to indicate location of extinguisher.

Extinguishers shall be mounted at reasonable height but not over 5 feet above floor.

Travel distance to fire extinguishers shall not exceed 50 feet.

Employees shall be aware of various types of fires that might occur within work area.

Employees shall be familiar with various types of extinguishers and their operation.

Areas leading to sprinklers, valves, exit doors, and extinguishers shall be kept clear.

Exit doors shall not be locked or inoperative while building is occupied.

The local fire department's number and other emergency numbers shall be posted near telephones at all times.

4.4 EXTINGUISHER MAINTENANCE

Fire extinguishers shall be maintained in a fully charged and operable condition and kept in designated places at all times.

Fire extinguishers shall be inspected by safety personnel monthly and annually to ensure they are in their designated places, to ensure they have not been discharged, and to detect any physical damage.

Extinguishers removed for recharging shall be replaced by extinguishers of the same type.

Discharged extinguishers shall be returned to an area designated by each district or by the Central Office for refilling or replacement.

Chapter 5
SAFETY MEETINGS

5.1 GENERAL INFORMATION

Regular safety meetings are essential to the success of any safety program. They serve not only to introduce safety precautions necessary with new equipment but also to review recommendations for current operations. Recent accidents and injuries should be discussed during these meetings so that preventive action can be taken.

5.2 RESPONSIBILITY FOR MEETINGS

The supervisor shall conduct a scheduled routine safety meeting to discuss safety or health issues with his or her employees regularly:

- At least once quarterly for office workers
- At least every 10 working days for field employees

The supervisor shall document the following information using a time roster:

- Names of attendees
- Date
- Subject matter discussed
- Name of instructor

The supervisor shall maintain the safety meeting records for a minimum of 2 years.

The Division of Employee Safety and Health should be contacted to aid in providing information.

Chapter 6
INJURY REPORTING

6.1 GENERAL INFORMATION

Every work-related personal injury or illness shall be reported to the supervisor as soon as possible.

The supervisor shall provide the **Workers Compensation–First Report of Injury or Illness Form IA-1** to the employee to fill out. The employee is to complete the Form IA-1 in detail and then return it to the supervisor.

The supervisor shall send the form to the assigned OSHA record keeper.

6.2 SERIOUS INJURY OR FATALITY

Notification of the death or serious injury of a Cabinet employee, whether work-related or nonwork-related, shall be immediately made to the director or assistant director, Division of Employee Safety and Health, via telephone **(502) 564-6963**, e-mail, or fax **(502) 564-6683**. The information shall include the:

- Employee's name
- Position classification
- Current address
- Details surrounding the incident

In the event of a death, the information should also include the:

- Name, address, and relationship of the next of kin
- Names and addresses of dependent children

However, **DO NOT** delay even if all the information is not readily available.

Upon receipt of the notification, a representative of the Division of Employee Safety and Health shall be dispatched to investigate the incident. The Division of Employee Safety and Health shall then notify the:

- Secretary's Office
- Commissioner of Administrative Services
- Division of Workers' Compensation
- Transportation Cabinet's insurance coordinator

Chapter 7
VEHICLE INCIDENT REPORTING

7.1 GENERAL INFORMATION

All incidents involving Transportation Cabinet vehicles or equipment shall be reported on **Form KSP 232.** This form shall contain correctly outlined details of the incident in a statement by the person involved. If that person cannot give a written statement, the supervisor shall complete the form in the involved person's own wording. The completed form shall be forwarded to the district equipment supervisor or appropriate division director, who will forward a copy to the Office of Legal Services. A copy also shall be given to the safety specialist for investigation, who shall then report findings to the Division of Employee Safety and Health.

The district's or Central Office's Loss Control Committee shall be responsible for deciding what action is necessary in cases involving carelessness, negligence, or intentional abuse. The committee shall meet monthly to provide a fair and timely review of incidents.

7.2 SERIOUS VEHICLE OR EQUIPMENT INCIDENT

If any Cabinet employee operating state equipment or state vehicle is involved in an incident resulting in serious injury, property damage, or fatality to another party, the responsible district or division shall immediately notify the Director or Assistant Director, Division of Employee Safety and Health. In the districts the safety specialists shall also be notified.

A safety specialist, safety program coordinator, or safety administrator will promptly investigate the incident and report findings to the Director of the Division of Employee Safety and Health.

Chapter 8
PERSONAL PROTECTIVE EQUIPMENT (PPE)

8.1 INTRODUCTION

The Division of Employee Safety and Health shall approve the purchase of all personal protective equipment to ensure items meet OSHA requirements and specifications.

Personal protective equipment is available at district equipment garages and may be requisitioned from the Frankfort equipment warehouse. Requests for special safety equipment not carried in stock shall be directed to the Division of Employee Safety and Health.

8.2 SAFETY/HARD HATS

Regardless of their positions or work locations, all Transportation Cabinet employees engaged in any outside work are required to wear hard hats at all times. Hard hats also are required indoors where possibility of head injuries exists.

Hard hats shall meet applicable ANSI standards for work being performed.

For identification and safety reasons, “hi-vis” orange hard hats should be designated for nonsupervisory personnel, and white hard hats should be designated for supervisory personnel.

8.3 WELDING HELMETS

Helmets are required while welding or when inspecting welding on construction sites. Filter lenses and plates shall be chosen in accordance with the welding operation. The chart shown below is a guide for the proper shade numbers. These recommendations may be varied to suit individual needs.

WELDING OPERATION	SHADE #
Shielded metal—arc welding— 1/16”, 3/32”, 1/8”, 5/32” electrodes	10
Gas—shielded arc welding (nonferrous)—1/16”, 3/32”, 1/8”, 5/32” electrodes	11
Gas—shielded arc welding (ferrous)—1/16”, 3/32”, 1/8”, 5/32” electrodes	12
Shielded metal—arc welding: 3/16”, 7/32”, 1/4” electrodes	12
5/16”, 3/8” electrodes	14
Atomic hydrogen welding	10• 14
Carbon arc welding	14
Soldering	2
Torch brazing	3 or 4
Light cutting, up to 1”	3 or 4
Medium cutting, 1” to 6”	4 or 5
Heavy cutting, 6” and over	5 or 6
Gas welding (light) up to 1/8”	4 or 5
Gas welding (medium) 1/8” to 1/2”	5 or 6
Gas welding (heavy) 1/2” and over	or 8

8.4 EYE PROTECTION

Appropriate eye protection shall be used by employees exposed to eye hazards from flying particles, molten metal, liquid chemicals, acids or caustic liquids, chemical gases or vapors, or potentially injurious light radiation.

All supervisors shall be responsible for obtaining the necessary quantity of eye protection devices from garage stockrooms and for enforcing the wearing of eye protection when it is required. Supervisors shall contact the Division of Employee Safety and Health with questions regarding eye protection selection.

Appropriate eye protection shall be worn as follows:

- **Safety Spectacles**

  Safety spectacles protect against straight-on impact. Employees shall wear safety spectacles when engaged in grinding, machining, woodworking, chipping, chiseling, post driving, jackhammering, concrete cutting, cutoff sawing, chain sawing, drilling, etc. Safety spectacles are not appropriate protection for nuisance dust, rust particles, light, radiation, or other particulates.

  Regular scratch-resistant prescription spectacles do not provide impact resistance.

  Side-shield protection is required.

  Over-the-Glasses (OTGs) glasses are available for workers who wear prescription eyewear and need impact eye protection.

OR

- **Goggles**

  Appropriate goggles shall be worn when hazards include nuisance dust, rust particles, light radiation, sand, glass beads, sprays and mists, chemicals, or other particulates.

  Four basic goggle types are:

  - **Impact goggles** have perforated holes in the side with direct ventilation.
  - **Chemical goggles** have passive vents with indirect ventilation.
  - **Ventless goggles** eliminate entry of contaminants.
  - **Cutting goggles** protect against harmful light and radiation.

8.5 FACE SHIELDS

Face shields are required when employees are using a battery charger, handling corrosives, pouring chemicals, or doing any other activities that necessitate use of full-face protection.
Face shields protect the face and do not provide eye protection from impact. Eye protection, if required, shall be worn under the face shield.

Chain saw operators shall wear a plastic or mesh face shield to protect from flying wood chips.

8.6 RESPIRATORY PROTECTION

The Transportation Cabinet has provided a number of respirators, including disposable types, to employees exposed to breathing air contaminated with harmful dusts, fogs, mists, fumes, gases, smokes, sprays, or vapors. The selection of the appropriate respirator shall be made based upon the hazard encountered and in accordance with applicable OSHA standards and the Transportation Cabinet's Respiratory Protection Program.

Where disposable respirators are used but not required, respirator users shall be provided information from **Appendix D of the Respirator Standard,** found in **29 CFR 1910.134**.

Where respirator use is required, all applicable provisions of the Transportation Cabinet's Respirator Program shall be met. These provisions include, but are not limited to, selection, medical evaluation, fit testing, use, cleaning, and storage. Supervisors should contact the Division of Employee Safety and Health with questions regarding respiratory protection.

NOTE: All of the provisions above shall be met before an employee is permitted to wear a respirator. Written approval from the safety office shall be obtained before an employee is issued a neoprene-type respirator to wear.

8.7 LIFE JACKETS (PERSONAL FLOTATION DEVICES)

Life jackets shall be worn by employees working in an area where a fall into water and danger of drowning exist except when a fall-arrest system incorporates a 100 percent tie-off rule. Life jackets shall be Coast Guard-approved.

8.8 GLOVES

- **Rubber gloves** shall be provided for handling certain types of chemicals and acids.

- **Other types of chemical-resistant gloves** shall be purchased for handling pesticides and other chemicals. Refer to the Material Safety Data Sheet or product label for specific types. For further questions, contact your safety representative for Employee Safety and Health.

- **Welder's gloves** shall be worn by employees who are cutting, welding, or conducting other such operations.

- **Impermeable gloves** shall be worn by employees while working with certain types of solvents. Since these are not a stocked item, they must be purchased locally.

- **Disposable latex gloves** shall be worn when providing first aid, cleaning rest rooms, picking up litter or dead animals, or doing other activities in which direct contact is undesirable.

8.9 RETROREFLECTIVE VESTS

Retroreflective vests shall be worn by all employees working in traffic-control flagging operations. Retroreflective vests shall also be worn by all employees who are within right-of-way limits.

NOTE: Retroreflective vests may not be required when they create a danger to the employee (e.g., feeding a brush chipper).

8.10 HEARING PROTECTION

Appropriate hearing protection shall be worn in accordance with OSHA standards.

8.11 RUBBER APRONS AND BOOTS

Rubber aprons shall be available for use with corrosive chemicals including, but not limited to, solvents and acids.

Rubber boots shall be worn as required by the Material Safety Data Sheet when employees are mixing and applying pesticides.

8.12 SNAKE-PROOF LEGGINGS

Leggings for the prevention of snakebites shall be provided to employees as needed.

Chapter 8
PERSONAL PROTECTIVE EQUIPMENT (PPE)

8.13 CLOTHING/ATTIRE—PROFESSIONAL APPEARANCE

Long pants and shirts or blouses covering the shoulders and midriff shall be worn. All Transportation Cabinet employees engaged in field activities should wear leather-upper work shoes. Examples of inappropriate shoes include, but are not limited to, sandals of any type, tennis shoes of any type, canvas shoes, and gym shoes.

Appropriate clothing and attire provide protection from sunburn, burns, insects, and poisonous plants and measured protection from injuries.

8.14 CHAIN SAW CHAPS

Chain saw chaps shall be worn by employees whenever operating a chain saw.

8.15 FALL PROTECTION DEVICES

All employees exposed to a potential fall to the ground or lower level of 4 feet or more shall be protected by OSHA-standard guardrails, safety nets, or fall-arrest systems.

All employees who might be exposed to fall hazards shall receive training and refresher training. This training shall be conducted by either the Division of Employee Safety and Health's personnel or other qualified trainer.

Harnesses, lanyards, and similar devices shall meet ANSI criteria and testing.

Lanyards shall be equipped with shock absorbers.

For the fall-protection policy, see **Chapter 13, Section 13.4.**

Chapter 9
GARAGE AND SHOP

9.1 HOUSEKEEPING

Good housekeeping is essential to maintaining a safe and efficient workplace. A garage or shop "good-housekeeping checklist" shall include, but not necessarily be limited to:

- Established procedure for cleaning up
- Floor drains kept clean and covers in place
- Exits clear at all times
- Steps and stairs cleared of objects
- Aisles not blocked by stored materials
- Floors clear of unused tools and materials
- Tools and equipment returned to proper storage areas when not in use
- Adequate provision made for disposal of waste

  NOTE: Lids or covers are required on containers with oily or greasy rags or other flammable waste.

- Approved dry compound or absorbent for oil and grease spills
- Floor covers for hoist controls kept in place
- Fire extinguishers, water control valves, and circuit breaker boxes provided with clear path for quick access

  NOTE: Circuit breakers shall be clearly marked as to what they control.

- Clean and orderly rest rooms provided with individual hand or cloth towels, adequate supply of toilet paper with holder, soap, and at least lukewarm water
- Windows and lights kept clean, all lights working properly
- Clean facilities provided for storing clothing, eating lunches, and taking breaks

- Materials securely stacked to prevent falling
- Grounds, driveways, and parking areas clean and orderly
- Adequate heating and ventilation in all parts of the building
- Adequate lighting provided
- Sufficient room between machines for safe operation
- No gasoline or flammables used for cleaning equipment, floors, and other items
- Spill kits used as required for in-house spills
- Used oil containers maintained in a clean manner and all spills cleaned up immediately

9.2 LADDERS

Ladders shall be well constructed, with the rungs inset in the side rails. The bottom of a ladder shall have rubber safety feet. Ladders shall be used in accordance with manufacturer's recommendations.

When ladders are positioned, they shall not be too straight or at too great an angle. The best angle is when distance from wall to base of the ladder is approximately one-fourth the length of the ladder. Ladders should always have firm footing and should be properly tied off with a rope or heavy string to prevent shifting. Only fiberglass ladders shall be used for repairs to electrical equipment or energized lines.

Ladders shall be stored away from traffic areas where damage could occur.

All ladders used for access to overhead storage areas or roofs must extend at least 3 feet above the point of support.

Ladders shall not be used in a horizontal position as platforms, runways, or scaffolds.

Chapter 9
GARAGE AND SHOP

9.3 LIFTING JACKS

Hydraulic jacks shall be inspected twice yearly for leaks and other deficiencies. The jack serial number shall be entered in a logbook on each inspection. The district equipment supervisor shall be responsible for inspections and maintaining the logbook.

Capacity of jacks shall be posted legibly, and the capacity shall not be exceeded.

Jacks shall be placed on a firm base. A wood block may be necessary on soft or uneven terrain. A wood block shall be placed between jack cap and load if there is a chance of slippage.

Safety stands shall be used by employees and shall be required when working beneath raised equipment.

9.4 STATIONARY AIR COMPRESSORS

Belt pulleys shall be guarded.

The compressor shall have an operative safety pop-off valve. The pop-off valve shall be operative when no more than 10 percent of the compressor's maximum working pressure is exceeded.

The drain plug or petcock on bottom or side of the compressor shall be removed weekly and compressor drained of water and any excess oil. A pressure gauge shall be present and operative. Air compressors shall be secured to the floor to prevent free movement.

9.5 FIXED ELECTRICAL EQUIPMENT

Grinders, drill presses, electrical saws, etc., shall be grounded according to federal, state, and local electric codes. Water fountains and soft drink machines shall also be grounded.

9.6 BUILDING WIRING

All permanent building wiring shall be in accordance with the current federal, state, and local electric codes.

9.7 BENCH GRINDERS

Grinders shall have:

- Wheel guards above and below the abrasive wheel

  NOTE: The abrasive wheel shall have an RPM rating higher than the RPM rating of the grinder.

- Tool rests set a maximum of 1/8 inch from the abrasive wheel
- A tongue guard mounted within 1/4 inch of the abrasive wheel
- A side cover around the spindle nut
- Mounted eye shields

  NOTE: The mounted eye shields do not replace required eye protection.

9.8 CHAIN HOISTS

Chain hoist capacity shall be posted legibly and shall not be exceeded. Hoist hooks shall have a safety latch or keeper.

9.9 FLOOR HOISTS

Hoist covers shall be kept in place when not in use. The covers shall be flush with the floor surface. See **Section 9.3** for inspection requirement.

9.10 FANS

All floor and office fans shall have blades guarded by a 1/2-inch guard or other suitable means.

9.11 BATTERY-CHARGING/CHANGING

Battery-charging/changing areas shall be separated from the areas of other operations. A sign—CAUTION, BATTERY-CHARGING AREA—shall be provided. The portable battery charger shall be stored in the designated area when not in use.

Face shields, rubber gloves, and rubber aprons shall be worn by personnel engaged in battery charging operations. A NO SMOKING sign shall be posted at the charging station.

Personnel handling battery acid (sulfuric acid) shall wear face shields, rubber gloves, and rubber aprons. These items shall be provided at the battery-charging site. During mixing, acid shall be poured into water and not vice versa. Sulfuric acid shall be stored only in equipment repair garages. Facilities shall be provided for flushing electrolytes from the eyes and skin with water when changing or charging storage batteries. A water supply capable of providing a 10-minute flush shall be within 25 feet of the work area.

Chapter 9
GARAGE AND SHOP

9.12 SAFETY TIRE CAGES

When tires that are installed on split rims with locking rings are filled with air, the tires shall be placed in an approved safety tire cage or rack. A clip or chuck and in-line gauge shall be used when airing tires with multipiece rims.

Field personnel who must fill such tires with air shall securely chain the rim and tire or otherwise positively secure the rim from disengaging. Tires shall be aired with lock ring facing the ground. A multipiece rim poster for compliance with **KOSHA Standard 1910.177** shall be posted in the immediate vicinity of the tire cage. Tires with multipiece rims shall be changed only by trained personnel in facilities with approved tools and equipment.

Employees engaged in servicing multipiece rims shall be trained in proper procedures by Division of Employee Safety and Health personnel.

9.13 MACHINE GUARDING

All open or exposed belts, pulleys, sprockets, shafts, couplings, flywheels, drive chains, etc., located within 7 feet of floor or ground shall be guarded.

9.14 GREASE PITS

Grease pits shall be provided a protective cover or removable type of 42-inch guardrail and 21-inch midrail. A positive means for stopping travel of vehicles shall be provided.

9.15 INSPECTION LIGHTS (DROP CORD LIGHTS)

- Extension cords shall be three-wire type and must be design-rated for hard or extra-hard usage (e.g., types S, ST, and SO).
- Cord plug ends shall not have the ground prong removed and shall be tightly closed.
- Temporary cords shall not be used as permanent wiring.
- Worn, spliced, repaired, or frayed cords shall not be used.
- Only qualified trained persons shall repair electric equipment.
- Workspaces and walkways shall be kept clear of cords.
- Droplights shall be of the approved grounded type that does not have means to attach an electrical tool.
- Extension cords and droplight cords shall not be fastened with staples, hung from nails, or suspended by wire.

- Flexible cords shall not go through wall holes.
- Only listed, labeled, or certified equipment shall be installed and used in accordance with manufacturer's instructions.

9.16 PAINT SPRAYING

Paint spraying indoors shall be done only in approved designated areas.

Respirators of an approved nature shall be used when needed. Only approved explosion-proof inspection lights shall be used. All light bulbs shall have a protective globe. Mechanical exhaust shall be provided when tests indicate the need. Trash cans shall be provided lids or covers. Filters on exhaust systems shall be changed as needed. All portable electrical and other electrical equipment shall be grounded. The paint spray area shall be thoroughly washed or steamed after use.

Lead-based paint shall not be used under any circumstances.

9.17 FLAMMABLE STORAGE

Flammables and combustibles unnecessary for operations shall not be stored inside buildings. Storage of flammables and combustibles shall be away from spark-producing operations.

Storage of flammables shall be in an approved metal cabinet when the quantity exceeds 25 gallons. Quantities of flammables 1 gallon or less shall be dispensed from the original container or an approved metal safety can.

Approved safety cans shall be used for handling flammables in excess of 1 gallon, unless the flammable is extremely hard to pour, in which case the original shipping container may be used.

NOTE: *Safety can* shall mean "an approved container of not more than a 5-gallon capacity, having a spring-closing lid and spout cover, and so designed that it will safely relieve internal pressure when subjected to fire exposure."

Gasoline shall never be stored in vehicle trunk compartments.

NO SMOKING signs shall be posted in areas where gasoline and other flammables are stored.

All safety cans shall be labeled in accordance with requirements in **Section 13.3, Hazard Communication.**

9.18 ELECTRICAL SAWS

All exposed belt pulleys and other parts with in-running nip points shall be adequately guarded when located within 7 feet of the floor. All electrical saws shall be grounded. All electrical saws shall have the "on-off" power source located within easy reach of operator. No adjustments shall be made to power saws while they are operating. Exhaust systems shall be provided where tests have indicated the need.

Housekeeping around power saws is of utmost importance. Loose sawdust shall be swept as often as necessary.

- **Hand-fed Crosscut Table Saws**

  Saw blades shall be guarded by a hood that will ride the stock as it is being cut. A spreader shall be provided behind the saw blade to prevent the stock from kicking back. Anti-kickback fingers shall be mounted on the hood guard and not on the spreader.

- **Swing Cutoff Saws**

  Saw shall be fitted with a hood or guard that completely encloses the upper half of the saw, arbor end, and point of operation at all positions of the saw. The guard shall drop on top of and remain in contact with the material being cut. Limit chains or other equally effective means shall be provided to prevent the saw from swinging beyond the front or back edges of table. A counterweight or other device shall be provided that will automatically return the saw to the rear of the table.

- **Band Saws**

  The saw blade shall be guarded as closely to the point of operation as possible. The guard shall encase wheels and all unused parts of the blade.

9.19 MECHANICAL AND NATURAL VENTILATION

Garages equipped with mechanical ventilation shall use the exhaust attached to equipment for carbon monoxide removal. Garages using natural ventilation (i.e., open doors or windows) shall be inspected by Division of Employee Safety and Health personnel to ensure adequate ventilation is being provided.

9.20 WORKING BENEATH LOADS

Employees shall use at least 4-inch x 4-inch blocking when working under raised truck beds unless the vehicle is equipped with manufacturer-installed safety supports. The blocking shall be placed horizontally behind the hydraulic cylinder. Employees shall never work beneath suspended loads that are not blocked or cribbed.

9.21 HAND TOOLS

- Only tools that are in good condition shall be used. Defective tools shall not be issued or kept in storage with usable tools.
- Cracked and split handles shall be replaced and not taped.
- A definite storage space shall be provided on the job, in the yard, or inside buildings for proper storage of tools.
- Tools shall be put in proper storage when not in use so as not to constitute a hazard.

Chapter 10
PORTABLE POWER TOOLS

10.1 GENERAL INFORMATION

All portable power tools shall be used in accordance with the manufacturer's recommended operating procedures. Only Cabinet-owned tools shall be used.

No portable electric tool shall be used if operator must stand or be located near water.

When using any portable power tool, operators shall wear all required personal protective equipment.

10.2 ELECTRICAL TOOLS

♦ Grounding

All hand-held portable electrical tools shall be grounded. The tool is grounded when one of the four following criteria is met:

- The tool has an approved double-insulated system.
- The tool has a three-wire and three-prong system.
- The wall receptacle has wiring in conduit, or the wiring is bonded to a grounded structure.
- The adapter has the grounding pigtail wire affixed to the wall receptacle faceplate screw.

♦ Electrical Cords

Cords shall be replaced when insulation is worn or frayed. Cords shall not be left in walkways so as to create a tripping hazard. Cords shall be protected from grease and oil spills.

Extension cords (drop cords) shall have wiring equal to the wiring of the tool being used with it and shall be of the grounded type when used with portable electrical tools.

Wiring on plugs shall be covered with approved insulated discs.

♦ Electrical Drills

Electrical drills shall have a constant pressure switch (on-off switch) and may have a lock-on control that can be turned off with the same finger or fingers that turned it on.

When drilling loose pieces of material, the work shall be clamped in a vise or otherwise secured to prevent work from spinning.

- **Electrical Circular Saws**

  Each saw shall be provided a constant pressure switch that shuts off power when pressure is released.

  Circular saws shall be equipped with guards above and below the base plate or shoe. The bottom guard will move freely as the stock is being cut. This guard shall automatically and instantly return to the covering position when the saw is withdrawn from the work. Operators shall not remove or block this guard in open position.

- **Grinders and Disc Sanders**

  Grinders with abrasive wheels that exceed 2 inches in diameter shall have a protective hood or guard that will cover at least the top half of the abrasive wheel (180-degree coverage). Switches for grinders and disc sanders shall be of the "on-off" type only when diameters of abrasive wheels and discs are less than 2 inches.

  Grinders and disc sanders with abrasive wheels and discs 2 inches or greater in diameter shall be equipped with a momentary contact "on-off" switch. The switch may be locked in the "on" position if the same finger or fingers can be used to turn it off.

10.3 PORTABLE AIR COMPRESSORS

Portable air compressors shall have safety chains affixed to the tongue hitch for use with the vehicle towing the compressor. All compressed air-line couplings shall have a safety wire secured through the matching holes from one coupling to another to prevent separation of hose sections while under pressure.

Personnel using compressed air for jackhammering, pavement breaking, etc., shall wear approved protective eye shields. Ear protection is required on personnel operating jackhammers and other persons within 25 feet of the air compressor or as indicated by sound meter readings.

10.4 AIR-POWERED TOOLS

- **Cleaning with Air**

  Compressed air pressure shall be reduced to 30 psi when used for cleaning purposes. Approved eye protection shall be worn by all employees exposed to flying particles.

  Compressed air shall not be used for cleaning clothes and parts of body.

- **Air Hoses**

  All sections of air hoses used with air compressors shall have couplings secured by a safety wire affixed in provided holes.

- **Air-Powered Portable Grinders**

  Air-powered portable grinders shall have the same guarding as electrical portable grinders.

- **Jackhammers and Pavement Breakers**

  Safety clips or retainers shall be provided to prevent attachments (bits, etc.) from being accidentally withdrawn or expelled. Personnel using these tools shall exercise particular care in the positioning of feet. Approved ear and eye protection is required during operation.

- **Sandblasters**

  The blast-cleaning nozzle shall be equipped with an operating valve that must be held open manually. Operator shall wear air-line respirator used with approved type of air compressor.

10.5 PORTABLE ELECTRIC GENERATORS

The motor shall be bonded to the stand so that a good ground is evident. A heavy-duty copper wire shall be attached to generator stand. The wire shall be attached to a ground rod driven into the ground. All portable electric tools (unless double-insulated) shall be the grounded type when used with portable electric generator. All portable electric generators shall be equipped with ground fault circuit interrupters.

10.6 OTHER POWER TOOLS

- **Chain Saws**

  Chain saw operators shall be aware of their surroundings. Firm footing shall be utilized at all times. Chain saws shall be shut off before any adjustments are made. Chain saws shall not be left unattended while running.

  Chain saws shall be removed from operation if the constant pressure switch, when released, allows the saw to continue to operate.

Smoking is not permitted while operating a chain saw.

The chain saw blade shall be covered when not in use.

Chain saw gas mixture shall be stored in labeled, approved safety cans.

All necessary personal protective equipment shall be worn by chain saw operators. This includes, but is not limited to, chaps, eye protection, hearing protection, and hard hats.

- **Weedeaters**

Shields covering the cutting blade shall not be removed.

Operators shall be aware of surroundings and keep all other personnel away from operation.

Extra fuel shall be stored only in labeled, approved safety cans.

Chapter 11
CUTTING AND WELDING OPERATIONS

11.1 STORAGE AND HANDLING OF OXYGEN AND ACETYLENE CYLINDERS

Full oxygen and acetylene cylinders shall be separated by a minimum distance of 20 feet unless a fire-retardant wall separates the cylinders.

Empty oxygen and acetylene cylinders shall have valves closed. Oxygen-cylinder valves shall never be allowed to come into contact with grease or oil.

Oxygen and acetylene cylinders shall be secured to hand trucks with a chain or rope when used in shop operations. Additional cylinders not secured on hand trucks shall be secured against a wall.

Oxygen and acetylene cylinders shall be secured to prevent upsetting when used on service trucks for field repairs. Cylinders shall not be transported or operated in a horizontal position.

Valve caps or approved cylinder safety caps shall be in place when the cylinders are transported. This also applies to cylinders secured on hand trucks and service trucks.

Cylinders shall be stored far enough from the cutting and welding operation to prevent contact with hot slag, sparks, or flame.

Acetylene cylinders shall have the valve wrench kept in place on the valve spindle.

Leaking cylinders shall be moved to an open area with good ventilation. Warning signs must warn personnel against using spark- or flame-producing items.

Cylinders containing oxygen and acetylene shall not be taken into confined spaces.

Cylinders shall be handled with care at all times.

11.2 CUTTING OPERATIONS

Torches shall be lit by friction lighters or other similar sources and not by matches or cigarette lighters.

Acetylene and oxygen cylinders shall have operable pressure regulators.

Hoses with breaks shall be replaced. Tape on hoses with breaks shall not be allowed. Hoses shall be frequently inspected.

Cylinder valves shall be closed upon work completion. Pressure shall be bled from oxygen and acetylene torches.

Acetylene cylinders frozen to the ground shall have lukewarm water applied—and not open flame.

Hose for cutting operations shall be positioned so as not to create a tripping hazard.

Cutting-torch operators shall immediately mark material worked upon as “hot” if other personnel may come in contact with the work.

Acetylene torches shall not be operated with more than 15 psi.

11.3 ELECTRIC WELDING

Only electrode holders capable to safely handle the maximum-rated current required by the electrodes shall be used.

Any current-carrying parts passing through the portion of the holder that the arc welder grips in his or her hand and the outer surfaces of jaws of the holder shall be fully insulated against the maximum voltage encountered to ground.

Splices and breaks in electrode cables within 10 feet of the electrode holder shall not be permitted.

Welding cables shall be kept dry and free from grease and oil.

The frames of all arc-welding machines shall be grounded either through a third wire in the cable containing the circuit conductor or through a separate wire that is grounded at source of the current.

The welding machine shall have overcurrent protection provided by a circuit breaker that is in view of the operator.

Electrodes shall be removed from the holder when electrode cables are left unattended or when the job is completed.

Hot electrodes shall not be dipped into water.

In using welding power sources driven by internal combustion engines, exhaust shall be vented outside to prevent a carbon monoxide hazard.

Mechanical ventilation hoods shall be provided to remove toxic fumes and contaminants to outside building.

11.4 FIRE PROTECTION

Service trucks shall be provided for dry-chemical fire extinguisher with at least a 20-pound Class BC rating.

Welding operators in shops and garages shall have a dry-chemical (Class BC) fire extinguisher immediately available.

Cutting torches and welders shall not be used on used drums, barrels, tanks, or other containers until they have been thoroughly cleaned and no traces of flammable and/or toxic substances remain that could explode or catch fire when heat is applied. No drum, container, or hollow structure shall be cut or welded unless a pressure vent or opening is provided.

11.5 PERSONAL PROTECTIVE EQUIPMENT

All welders shall wear approved gloves.

A portable welding screen is required on electric welding jobs to shield harmful rays from other employees working in the near vicinity. This requirement applies to all garages and shops, and whenever practicable, in the field.

Welding helmets and cutting goggles shall be worn as described in **Chapter 8 (Personal Protective Equipment).**

Respirators shall be required and used in accordance with the Cabinet's Respiratory Protection Program when employees are cutting or welding under certain conditions.

Employees shall wear filter-type respirators (except when working on a beryllium-containing base, which requires an air-line respirator) when cutting, welding, or heating in the open space on:

- Metals containing or coated with lead-bearing materials
- Cadmium-bearing or cadmium-coated base metals
- Metals covered with mercury-bearing metals
- Zinc-bearing base or filler metals
- Lead base metals
- Cadmium-bearing filler material
- Metals coated with chromium-bearing materials

Other employees exposed to the same atmosphere as the welders or cutters shall be protected in the same manner as the welders or cutters.

When it is impossible to provide mechanical or local exhaust ventilation, air-line respirators shall be worn.

NOTE: When in doubt, supervisors shall contact the Division of Employee Safety and Health for information on the proper respirator to use.

Chapter 12
ACCIDENT PREVENTION TAG SYSTEM

12.1 GENERAL INFORMATION

Pursuant to Kentucky Occupational Safety and Health regulations, the Cabinet must have an accident prevention tag system (i.e., red tag system).

The purpose of the red tag system is to remove faulty or damaged equipment from service, preventing injuries to both state employees and the public as well as financial loss to the state.

The following information shall be entered on any tag affixed to state equipment:

- State number
- Type of equipment
- Reason for tagging
- Signature of person completing tag
- Date

After appropriate repairs have been completed, only the person who initially signed the tag shall remove it. This person will then sign and date the tag again, remove it, and file it.

The division director, chief district engineer, or designated representative shall be notified immediately of a tagged piece of equipment.

Chapter 13
SPECIALIZED PROGRAMS AND POLICIES

13.1 BLOODBORNE PATHOGENS (BBPs)

Bloodborne pathogens are small organisms present in the blood of infected people. Hepatitis viruses and the human immunodeficiency virus (HIV)—the virus that causes acquired immune deficiency syndrome (AIDS)—are bloodborne pathogens, which frequently cause disease.

An exposure control plan has been established for those employees who may have exposure to bloodborne pathogens. The purpose of the exposure control plan is to minimize or eliminate occupational exposure to potentially infectious materials. The written plan lists various engineering and work practice controls as well as items of personal protective equipment to be worn.

The immediate supervisor, administrative manager, and Division of Employee Safety and Health shall be immediately notified should an employee receive exposure to blood or other potentially infectious materials or be pricked or cut by a potentially infectious BBP object, such as broken glass or a needle. Medical attention shall be sought as soon as possible but not later than 24 hours.

BBP cleanup kits are required at all Cabinet facilities and shall be fully stocked. Replacement kits are available at equipment garages.

Additional information can be found in the applicable written *Exposure Control Plan* or the *Kentucky Occupational Safety and Health Standards.*

13.2 CONFINED SPACE ENTRY

A confined space is large enough and so configured that an employee can bodily enter and perform assigned work but has restricted means for entry and exit and is not designed for continuous occupancy. Common types of confined spaces include, but are not limited to, storage tanks, boilers, silos, vessels, underground vaults, manholes, sewers, trenches, ditches, or pits.

13.2.1 PERMIT REQUIRED

A confined space that has a risk of exposure to serious hazards—such as asphyxiating atmosphere, engulfment, entrapment by internal configuration, hazardous atmosphere, or any other serious safety or health hazard—becomes a "permit required confined space" (PRCS). If a PRCS exists, a detailed written procedure shall be established outlining safe entry, exit, and rescue procedures. A written permit shall be completed, approved, and filed. Duties for entrants, entry supervisors, standby attendants, and rescuers shall be developed and practiced. Typical equipment used by a confined-space team includes, but is not limited to, direct-reading atmospheric monitoring/measuring instruments, alarms, ventilation blowers, self-contained breathing apparatus or respirators, full-body harnesses, and winches.
Because of the inherent dangers of a PRCS, a confined-space team shall be well equipped and highly trained and should practice proper procedures on a regular basis.

NEVER enter what you think is a PRCS without proper training and equipment.

Drill shafts are PRCSs and shall not be entered by Cabinet personnel.

PRCSs shall be evaluated by competent persons.

Spaces that must be entered or exited by means of a manhole shall be considered PRCSs (e.g., sanitary sewers, pump stations, storm drains, and sewer cleanout junction wells).

When sufficient ventilation cannot be obtained without blocking the means of access, employees in a confined space shall be protected by air-line respirators. An employee shall be on emergency standby to communicate with those working within the confined space.

Employees cutting, welding, or heating in confined spaces on the following metals shall be provided either air-line respirators or local exhaust ventilation:

- Metals containing or coated with lead-bearing materials
- Cadmium-bearing or cadmium-coated base metals
- Metals covered with mercury-bearing metals

Welders and cutters working on beryllium-containing base or filler metals must be provided both local exhaust and air-line respirators.

Employees cutting, welding, or heating in confined spaces on zinc-bearing base or filler metals, lead base metals, cadmium-bearing filler material, or metals coated with chromium-bearing materials shall be provided mechanical exhaust ventilation.

13.3 HAZARD COMMUNICATION

The purpose of the Hazard Communication Standard is to ensure that hazards of all chemicals produced or imported are evaluated and that information concerning their hazards is transmitted to employers and employees. This transmittal of information shall be accomplished by means of comprehensive hazard communication programs, which are to include container labeling and other forms of warning, material safety data sheets, and employee training.

13.3.1 WRITTEN PROGRAM

The employer shall develop, implement, and maintain a written hazard communication program at each workplace.

13.3.2 CONTAINER LABELING

The employer shall ensure that each container of hazardous chemicals is labeled, tagged, or marked with the identity of the hazardous chemical(s) contained therein, and appropriate hazard warnings, or alternative words, pictures, symbols, or combination thereof that provide at least general information regarding the hazards of the chemical(s).

13.3.3 MATERIAL SAFETY DATA SHEETS

The employer shall be responsible for verifying that all hazardous chemicals entering the facility are accompanied by applicable material safety data sheets.

Copies of the required material safety data sheets shall be maintained in the workplace and shall be readily accessible to employees during each work shift.

Any vehicle carrying hazardous chemicals as a part of daily work activity shall have in the cab a copy of appropriate material safety data sheet(s).

13.3.4 TRAINING

The employer shall provide employees with effective information and training on all hazardous chemicals in the work area at time of initial assignment and whenever a new physical or health hazard is introduced.

All training shall be documented and shall be kept on file.

For more information, complete standards and written programs can be requested from Division of Employee Safety and Health at (502) 564-6963 or from the regional safety and health representative.

13.4 FALL PROTECTION

- All employees who might be exposed to a fall hazard shall receive training and refresher training.

- All employees exposed to a possible fall to the ground or lower level of 4 feet or more shall be protected by OSHA-standard guardrails, safety nets, or fall-arrest systems (FAS).

  - **Standard guardrails** shall have a 42-inch toprail (+ or – 3 inches), midrail, and 4-inch toeboard (if there is danger of objects falling on people). Guardrail strength shall support 200 pounds of force.

  - **Safety nets** (personnel or debris) shall be used when work surfaces are more than 25 feet above the ground, water, or other work surface, where the use of ladders, scaffolds, temporary floors, lifelines, or harnesses is impractical.

  - **Fall-arrest systems** (FAS) shall be utilized for fall protection when guardrail or safety nets are not feasible. The most basic FAS shall consist of an anchor point (5000#), lanyard, and ANSI harness. All components shall be connected for tie-off.

- All employees shall be protected when engaged in work or inspection of work on elevated work surfaces, platforms, lofts, decks, floor holes, stairs, tanks, bridges, leading edges, pick boards, one- and two-point suspension scaffolds, scaffold tower construction, fixed ladders in excess of 20 feet, crane booms, excavations or trenches, aerial lifts, ramps, buckets, trucks, snoopers, man baskets, radio or microwave towers, roofs, cliffs, rock ledges of roadway cuts, etc.

- All employees working over or near water, where a danger of drowning exists, shall wear a Coast Guard-approved life jacket. A life jacket is not required if the fall-arrest system maintains through design a 100 percent tie-off rule (double-legged lanyard).

- All employees required to use a lanyard shall be equipped with a shock-absorbing lanyard.

- All employees using fall-arrest equipment shall:

  - Limit the free-fall distance (through rigging) to a maximum of 6 feet
  - Be tied off (connected)
  - Inspect harness, lanyard, and anchor daily before use
  - Use compatible components
  - Follow the manufacturer's recommended instructions for each system component for use
  - Have their personal fall arrests inspected annually by a competent person
  - Protect safety lines, ropes, and lanyards against cuts and abrasions

13.5 EXCAVATING: TRENCHING AND SHORING

- Before excavation work begins, supervisors shall determine if underground utilities are located in the area.

- Any excavation greater than 4 feet deep (not in stable rock) shall be:

  - Provided with an adequate exit every 25 feet if employees are expected to enter
  - Tested for hazardous gases or oxygen deficiency if such conditions are likely to exist

- Any excavation greater than 5 feet deep (not in stable rock) shall:

  - Meet the conditions for an excavation greater than 4 feet deep (see above)
  - Have an adequate means of protection
  - Be inspected prior to and during the work shift by a competent person **(only someone receiving special training shall be qualified as a competent person)**

- Sloping shall be as follows:

  - Type A soil ¾ to 1 (53-degree angle)
  - Type B soil 1 to 1 (45-degree angle)
  - Type C soil 1½ to 1 (34-degree angle)

- Most soils in Kentucky are classified as “C.”
- The competent person shall be on site at all times when employees are in the excavation and shall have the authority to stop work if hazardous conditions are detected.
- Employees shall not work under loads being handled by excavating or lifting equipment.
- If employees enter the excavation, both the removed soil and the other work material shall be stored at least 2 feet from the edge.
- If a trench box, shoring, or other protective system will be used, information on the installation, use, placement, and removal shall be kept on site.
- If sloping at an angle of 34 degrees is chosen as the protective system, the soil does not have to be classified, but the other requirements shall still apply.
- Trenches or excavations left open overnight shall be barricaded, fenced, or otherwise protected.

13.6 SCAFFOLDS

- Scaffolds shall be erected, moved, dismantled, or altered only under the supervision of the competent person.
- Scaffolds shall be constructed to support four times the maximum intended load.
- Scaffold platforms shall be at least 18 inches wide.
- Scaffolds shall be plumb and level.
- Working platforms shall be solidly planked.
- Planking shall be scaffold-grade lumber.
- Free-standing scaffolds shall be anchored to the structure every 26 feet vertically and every 30 feet horizontally.
- Safe and convenient access shall be provided to the platform level by ladder, stair, or other recognized method.
- Scaffold suspension rope shall be free of splices and be capable of supporting six times the intended load.

- Catenary (picks), one-point or two-point suspension, and boatson chair scaffolds that require fall protection shall be independent of the scaffold or scaffold supports.

13.7 WORKING AROUND POWER LINES

Employees shall survey the area for overhead and underground lines before work begins.

The supervisor shall contact the power company in advance when lines are too close to work safely or exact location of underground lines is unknown.

A distance of at least 10 feet clearance from distribution lines shall be maintained. See the table below:

Normal Voltage (Phase to Phase)	Minimum Required Clearance
600 to 50,000 volts	10 feet
Over 50,000 to 75,000 volts	11 feet
Over 75,000 to 125,000 volts	13 feet
Over 125,000 to 175,000 volts	15 feet
Over 175,000 to 250,000 volts	17 feet
Over 250,000 to 370,000 volts	21 feet
Over 370,000 to 550,000 volts	27 feet
Over 550,000 to 1,000,000 volts	42 feet

In the right conditions, electrical current can arc through the air to an equipment boom or other ground. Never work near live distribution lines or electrical circuits. The power company, when notified, shall do one of the following:

- Disconnect or remove the distribution line.
- De-energize the distribution line.
- Guard the distribution line by insulation sleeves.

Chapter 14
VEHICLE AND EQUIPMENT SAFETY

14.1 GENERAL SAFETY REGULATIONS

Seat belts shall be used by all operators and occupants of state-owned or state-leased vehicles.

The driver or operator of a state-owned or state-leased vehicle shall ensure that all passengers buckle their seat belts before operation of vehicle.

It is the operator's responsibility to report through chain of command any safety hazard concerning assigned vehicle or equipment. It will then be that supervisor's responsibility to report the deficiency to the proper authority.

Division of Employee Safety and Health safety personnel shall periodically perform random vehicle checks.

Vehicle operators shall perform safety inspections of assigned vehicles each morning before putting vehicles into operation. Items to check include, but are not limited to, glass, horn, mirrors, lights, turn signals, brakes, tires and wheels, exhaust system, steering mechanisms, wheel bearings, and backup alarms.

Smoking is not permitted in a state vehicle while a nonsmoker is a passenger in that vehicle.

Equipment that does not have a license plate shall be inspected in the same manner as licensed vehicles.

All licensed vehicle tires shall never have less than 1/16 inch of tire tread except trucks, which shall have at least 1/8 inch of tread on front tires. Nonlicensed equipment shall not have bald tires or tires with exposed cord.

All equipment that normally operates, by design, under 25 mph shall have a slow-moving vehicle emblem mounted on the rear in a readily visible location, preferably to left center of equipment. Slow-moving equipment (graders, loaders, snow and ice removal equipment, and other equipment producing traffic hazards to motorists) shall have operable warning lights.

Equipment being towed shall have two safety chains properly connected to the towing vehicle.

All cracked glass on vehicles and equipment shall be replaced if the operator's vision is restricted or distorted.

Off-road equipment traveling a roadway shall utilize an escort vehicle. Escort vehicles shall be in compliance with **Chapter 16, Section 16.6, Escort Vehicles.**

Manufacturer operator and maintenance manuals shall be the standard to follow in the absence of regulatory standards.

Most earthmoving equipment require a sight distance of 1,000 feet to safely turn around. Flaggers shall be positioned when this distance is not available.

When airing loose tires mounted on rims with split lock rings, employees shall follow procedures outlined in **Chapter 9, Section 9.12.**

Emergency brakes shall be set on all equipment left unattended. Vehicles with automatic transmissions shall be left in "park." Vehicles with standard transmissions shall be left in "reverse" gear when facing downhill and "low" gear when facing uphill.

Chocking or blocking of wheels is required when jacks are used for changing tires or the vehicle is parked on an incline.

All equipment shall have engines turned off while refueling.

For backing all equipment, a backup alarm that meets federal standards is required. Backup alarms shall be maintained in an operable condition. A backup guide is recommended when rear vision is restricted. If no backup guide is available, the operator shall walk around the vehicle before backing.

Personnel shall not ride on the sides or top of equipment. Both the operator and the person riding shall be held accountable.

All steps and running boards shall be kept clean and in good repair.

Cabs of vehicles shall be kept free of loose chains, bottles, etc. All required equipment, such as first-aid kits, fire extinguishers, and tools, shall be secured.

An operable horn is required on all vehicles and equipment.

14.1.1 FOLLOWING DISTANCE

Vehicles in convoy or maintenance operations shall have at least 300 feet between vehicles.

Use the "three-second rule" to determine safe following distance. When the vehicle in front of you passes an obstacle, count "1-one thousand, 2-one thousand, 3-one thousand." If your vehicle has not passed that obstacle, you are at a safe following distance.

14.2 BULLDOZERS

Bulldozers shall be equipped with an overhead and rear canopy guard when used in site-cleaning operations. The overhead guard shall be 1/8-inch steel plate or 1/4-inch woven wire mesh with openings 1 inch or smaller. The rear guard shall be 1/4-inch woven wire mesh with openings 1 inch or smaller.

The bulldozer blade shall be lowered when a bulldozer is unattended.

Extreme care shall be used when working near cuts or fills.

When descending a slope, the operator shall doze two or three bladefuls of dirt to the edge of the slope. The operator shall ride down the slope with the edge of dirt in front of the blade. The blade shall not be lowered to regain lost dirt because this could overturn the bulldozer.

14.3 CRANES

An operator shall not operate any part of a crane or load within 10 feet of a power line unless protective insulated sleeves have been placed on the line or the line has been de-energized as indicated by the owner of the power line.

If any part of crane or load becomes energized, the operator shall remain in the cab until the line has been de-energized. If the crane catches on fire, the crane operator shall jump with both feet together as far as possible from the crane. **NOTE:** An operator can be electrocuted if dismounting the crane brings the operator into contact with the crane and the ground at the same time.

The operator shall not permit personnel to come in contact with crane carriage.

A standard set of signal illustrations shall be posted inside the cab.

At least a 5-pound, dry-chemical Class BC fire extinguisher shall be available on the crane.

The operator shall not permit personnel to ride on loads, hooks, hammers, or buckets.

Cranes shall be equipped with boom stops.

The operator shall not allow personnel to work beneath a raised load.

The operator shall not leave controls while a load is suspended from the boom.

Cranes shall have a boom-angle indicator in clear view of the operator.

The bucket, load, block, and hooks shall be lowered to the ground or otherwise secured when the crane is shut down.

The wire rope shall be inspected at least monthly. Wire rope on pile-driving operations shall be checked daily. Following is a checklist of conditions that require the rope to be removed from service.

- **Running Rope**
  - **Condition**—six broken wires in one lay, or three broken wires in one strand

    NOTE: A **strand** is that portion consisting of several wires drawn tightly together in one group. A **lay** consists of the length along the rope in which one strand makes a complete turn around the rope. Most rope used on Transportation Cabinet operations is rate 6 x 19, which consists of 114 individual wires.
  - **Wear**—wear of one-third the original outside diameter of individual wires
  - **Distortion**—rope distorted from kinking, etc.
  - **Diameter**—reduction of more than 3/64 inch of the original diameter of rope
  - **Broken Wires**—more than eleven broken wires in entire rope
- **Standing Rope**—more than two broken wires in one lay beyond the end connections or more than one broken wire at end connection

The boom, hoist, and vehicle brakes shall be tested before each operation.

Hooks that have been twisted in excess of 10 percent shall be removed from service. Cracked hooks shall be removed from service. Hooks with throat openings in excess of 15 percent of normal opening shall be replaced.

A monthly crane inspection report shall be kept readily available by district equipment supervisors.

14.4 OIL DISTRIBUTORS

Two dry-chemical fire extinguishers are required to be mounted on the front or side. The extinguishers shall have at least a 20-pound BC or ABC rating. Extinguishers shall be placed approximately 20 feet to rear of distributor any time oil is being heated.

Exposed shaft couplings and pulley belts shall be shielded.

Oil shall never be heated when oil level is below flues.

The burners shall not be operating while distributor is being driven.

Oil distributors shall never have burners lit within 50 feet of gasoline, diesel, or kerosene storage. Whenever possible, a segregated area shall be utilized away from private automobiles and other property.

The hand spray bar and other lines shall be cleaned after each day's use. Waste materials shall be sprayed into container and collected as part of hazardous waste program.

Under no conditions shall gasoline be used for cleaning purposes. Do not transport open containers of gasoline on oil distributor.

Extreme care shall be used on windy days to prevent oil from being blown onto private cars and other property. Employees shall work so that the wind will carry oil vapor away from truck exhaust or burners. This type of operation will require that careful attention be given to maintaining steps and platforms in a nonslippery condition. Personnel shall be provided a grab bar or railing when operating from rear of distributor.

Special care shall be given to keep taillights clean and free of oil.

LP gas shall be limited to one container per vehicle, with a capacity of not more than 100 pounds when stored within buildings. All containers' valves shall be closed.

14.5 FORKLIFT TRUCKS

Only properly trained personnel are permitted to operate forklifts. The immediate supervisor is responsible for ensuring operators receive proper training.

An overhead guard shall be provided.

Loads shall be lowered to lowest position possible when moving from one location to another.

When a forklift is left unattended, the forks shall be fully lowered, controls positioned in neutral, and power shut off.

Wheels shall be chocked on an incline.

Personnel shall not be lifted unless an approved safety platform is provided. The platform shall have toeboards, handrails, and midrails.

The operator shall not permit personnel to be positioned beneath any raised portion of the forklift.

Arms and legs shall not be placed between uprights of mast or outside running lines of truck.

Forklifts shall have a 5-pound dry-chemical or all-purpose fire extinguisher.

Forklifts shall have an audible horn.

14.6 GRADERS

Graders that are used for snow and ice removal shall have a reflective guide bar attached to the blade corner nearest the traffic side.

All graders shall have operable warning lights.

All graders shall have a SLOW-MOVING VEHICLE sign mounted in the rear, preferably to left center.

Riders shall not be permitted at any location other than seated in grader cab.

The blade shall be lowered to the ground when grader is left unattended.

14.7 FRONT-END LOADERS, BANTAMS, GRADALLS, AND EXCAVATORS

Operators shall wear seat belts.

All above-mentioned equipment shall have operable warning lights and a SLOW-MOVING VEHICLE sign mounted in rear.

Operators shall lower bucket to the ground upon shutting down or leaving equipment.

Operators shall never operate equipment with personnel working directly beneath bucket.

Operators, when traveling forward, shall carry the bucket as close to the ground as possible for best machine stability and visibility.

It is best, whenever possible, to back the loader down steep inclines rather than travel forward with bucket loaded.

Personnel shall not be elevated or transported in the materials bucket.

14.8 BACKHOES

Backhoes shall be equipped with roll bars, and operators shall wear seat belts.

All backhoes shall have warning lights.

Backhoes shall have outriggers extended and be on solid footing before work begins.

The bucket shall be filled with dirt or rock before excavating begins.

The boom shall not be swung over or toward employees.

The bucket, boom, and outriggers shall be lowered when not in use.

14.9 TRACTORS (Also see Chapter 16, Section 16.6, Tractor Mowing.)

Seat belts shall be worn by operators at all times.

Tractor shall have a SLOW-MOVING VEHICLE sign mounted in rear and in a location that can be readily seen. Signs shall be mounted in a position that will not block rear view of the operator.

No riders are allowed at any time on tractor or attached equipment.

The power takeoff shall have a protective shield in place.

Tractors shall not be operated on steep slopes.

Operators shall be especially watchful for culverts and other fixtures that may be hidden by grass or weeds.

14.10 ROLLERS

All rollers shall be provided warning lights. Lights shall be in operation during periods of maintenance operations and whenever roller is being towed.

Extreme care shall be exercised by the roller operator on shouldering operations, especially near embankments.

Steel-wheeled rollers shall not be used to roll shoulders less than 18 inches in width.

Roller drums shall be chained to frame while being towed.

Operators shall wear seat belts if the roller is equipped with rollover protection.

14.11 TRUCKS

All trucks shall be checked each morning to ensure operating systems are functioning properly (refer to **Section 14.1**).

The truck cab compartment shall contain no more passengers than the number of available seat belts.

When driving too slowly for traffic conditions, employees shall pull safely off roadway to let traffic pass.

Employees riding in trucks with seat belts shall wear belts whenever truck is in operation.

Dump trucks shall be provided with mud flaps.

All loads shall be covered with a tarp.

14.12 TRANSPORT OPERATIONS (LOWBOYS)

Anytime equipment is transported on “lowboys” and a wide-load situation exists, an escort vehicle shall be provided on two-lane highways. The vehicle shall have a revolving amber or strobe light and be positioned so as to offer maximum protection to oncoming motorists in curves, over hills, etc.

All loads over 10 1/2 feet in width or 75 feet in length (depending on road alignment) shall have an escort vehicle provided. An escort vehicle shall also be provided whenever the blade or bucket on equipment extends over the lowboy.

It is the responsibility of the supervisor in charge of equipment being moved to provide traffic control measures (flaggers, signs, etc.) when necessary.

14.13 BELT LOADERS

If the belts are kept in proper adjustment, it is not necessary to apply belt dressing. However, if belt dressing is used, it shall be applied when the belt is not running or per operator’s manual.

14.14 BUCKET TRUCKS (AERIAL LIFTS, "CHERRY PICKERS," AUTOCRANES, AND LADDER TRUCKS)

Bucket trucks shall not be field modified without written permission from the manufacturer.

Bucket trucks used around energized equipment shall have an insulated platform.
Prior to transit, the boom and bucket shall be cradled and locked down, either hydraulically or manually.

Only trained personnel are permitted to operate a bucket truck.

The supervisor shall maintain a record of a written monthly inspection of the bucket truck and boom equipment.

Annual di-electric testing shall be performed to ensure insulation values.

Only nonconductive hydraulic fluids shall be used. Adding the incorrect fluid will require purging of the entire system and a new di-electric test.

Load limits of a bucket, boom, or jib crane shall not be exceeded.

The boom shall not be used to lift or move materials.

Wheel chocks shall be used prior to work beginning.

Outriggers (stabilizers) shall be properly utilized and positioned.

Overhead clearances shall be checked prior to passage.

The bucket shall not be modified in any manner.

Booms shall be kept clean—free of dirt, oil, and road grime.

Truck beds shall be kept orderly and clean.

Bucket operators shall tie off by utilizing a lanyard and ANSI-approved harness.

Traffic-signal work shall also comply with **Chapter 16, Section 16.6, Traffic-Signal Work.**

14.15 TRUCK-MOUNTED ATTENUATORS

Truck-mounted attenuators shall be mounted on well-maintained and reliable vehicles.

Dump trucks with truck-mounted attenuators shall have at least 2,000 pounds of ballast in the truck bed.

Flashing-arrow panels shall be mounted on vehicle. A 4-foot x 8-foot arrow panel is the appropriate size for high-speed, high-volume highways.

Truck-mounted attenuators may be utilized on moving or stationary work sites. On moving jobsites, appropriate rear-mounted warning signs shall be displayed to provide advance warning.

Strobe lights shall be mounted on top corners of a truck-mounted attenuator when in the down position.

All safety devices and lighting shall be kept clean and in proper working order.

14.16 ARROW PANEL

Arrow panels shall be maintained in accordance with the manufacturer's recommended instructions.

Arrow panels are key to work-zone safety. Truck-mounted or trailer-mounted arrow-panel vehicles shall be in reliable condition.

Minimum distance for arrow legibility shall be met as follows:

- Type A (48 inches x 24 inches) 12 lamps = 1/2 mile minimum legibility distance
- Type B (60 inches x 30 inches) 13 lamps = 3/4 mile minimum legibility distance
- Type C (96 inches x 48 inches) 15 lamps = 1 mile minimum legibility distance

An arrow panel with burnt-out lamp elements or inoperative parts shall be repaired immediately.

Only the manufacturer's listed and approved parts shall be used.

14.17 TRAILERS AND EQUIPMENT TRANSPORTING

A trailer shall not be loaded beyond its rated capacity.

Trailer taillights and turn signals shall be visible and in working condition.

Cargo shall be secured by using only approved transport chain or web-strap bindings.

Two-vehicle maximum towing load shall not be exceeded.

Vehicle tongue weight capacity shall not be exceeded.

Chapter 15
LABORATORY AND MATERIALS TESTING

15.1 GENERAL SAFETY PRECAUTIONS

A written chemical hygiene plan shall be developed and implemented in accordance with **OSHA standard 1910.1450** for each laboratory facility.

A written hazard communication plan shall be developed and implemented for each laboratory facility (see **Chapter 13, Section 13.3).**

Material Safety Data Sheets (MSDS) for chemicals being handled shall be available at each facility. Information on MSDS shall be followed.

A person certified in first aid shall be on site in every laboratory.

Fully stocked first-aid kits shall be readily available for all laboratory employees.

All chemical containers shall be labeled as to their content.

Proper ventilation shall be provided at all times.

Personal protective equipment shall be worn as required.

15.2 FIRE AND EXPLOSION PROTECTION

Chemicals that are not compatible with one another shall be stored separately. It shall be the supervisor's responsibility to provide all employees with adequate knowledge concerning storage compatibility and safe handling practices.

Flammables with low flash points shall be handled with extreme care. The vapor shall not be allowed to come into contact with a source of ignition. Nonsparking tools shall be used to open drums and other containers of flammable materials.

ABC fire extinguishers shall be available and compliant with **Chapter 4, Section 4.3.**

Chapter 16
JOBSITE SAFETY AND TRAFFIC CONTROL

16.1 GENERAL INFORMATION

Traffic control is one of the most important functions the Transportation Cabinet can provide to its employees and the traveling public. Every reasonable precaution shall be taken to protect everyone from becoming involved in any accidents caused by construction, preconstruction, or maintenance operations.

Supervisors may delegate their authority on occasion, but never their ultimate responsibility. It is the supervisor's responsibility to assure correct jobsite procedures are followed as outlined in the *Manual on Uniform Traffic Control Devices* (MUTCD) and statewide flagger-training courses. The type of traffic control needed will vary according to the nature, location, and duration of work; type of roadway and speed of traffic; and potential hazards.

In hazardous situations, local police or Motor Vehicle Enforcement's assistance may be requested.

On jobs where traffic cones are required, the job shall be set up in this sequence:

1. Signs
2. Flaggers
3. Cones
4. Crew and equipment

If the job does not require traffic cones, the proper sequence shall be:

1. Signs
2. Flaggers
3. Crew and equipment

When traffic cones are being removed from a jobsite, they shall be removed from the jobsite back to the flagger. All warning signs and/or electric-arrow lights shall be kept in place during cone pickup.

A fully stocked first-aid kit and a person adequately trained to render first aid shall be present on all jobsites for the duration of the job.

16.2 SIGNS AND CONES

All warning signs shall be black lettering on an orange background. When warning signs are utilized on interstates and parkways, they shall be 48 inches in size. When possible, this size shall be used on four-lane roads and urban areas; otherwise, 36-inch signs shall be used unless lack of adequate shouldering would cause this size sign to be located partially in the roadway.

Requirements may exist for placing advance signs at 1/2 mile, 1 mile, or even 2 miles from the work site to inform traffic of possible delays before reaching exits that might lead to alternative routes and where traffic might be expected to back up past conventional warning signs placed at the work site. Additional advance warning on adjacent facilities shall be placed whenever entrances to the limited-access facility are past the usual warning signs.

The lead sign on each end of all jobsites shall have a red flag secured to it (or a traffic cone placed next to the sign). All warning signs shall have the bottom portion a minimum of 12 inches from the ground.

Traffic cones measuring a minimum of 28 inches shall be used on four-lane stationary jobsites. Cones shall be kept clean and bright for maximum target value. The first cone shall be placed 840 feet from the actual jobsite and on the shoulder. The cones shall taper from the shoulder gradually to the roadway center-line mark, up to and including the last piece of equipment or the last employee. For posted speeds of 40 mph or less, the length of the taper shall be based on the formula L = WS2/60; for posted speeds of 45 mph or more, the formula L = S x W shall be used. For example, a road with a speed limit of 55 mph and a lane width of 12 feet would require a taper length of 660 feet, and a road with a speed limit of 65 mph with a lane width of 12 feet would require a taper length of 780 feet. There shall be a traffic cone positioned every 40 feet on center line.

Traffic cones measuring a minimum of 28 inches shall also be used on two-lane stationary jobsites. The taper length shall be no less than 50 feet and no more than 100 feet.

16.3 HAND-SIGNALING DEVICES

A number of hand-signaling devices such as STOP/SLOW paddles, lights, and red flags are used in controlling traffic through work zones. The sign paddle bearing the clear message STOP or SLOW provides motorists with more positive guidance than flags and shall be the primary hand-signaling device. Flag use shall be limited to emergency situations and at spot locations that can best be controlled by a single flagger.

16.4 FLAGGERS

Flaggers are responsible for human safety and the prevention of equipment and property damage; therefore, it is important that responsible personnel be selected. A flagger shall possess the following qualifications: adequate physical condition, courteous but firm manner, neat appearance, and sense of responsibility for the safety of the public and working crew.

Flaggers are provided at jobsites to stop traffic intermittently as necessitated by work progress and to maintain continuous traffic flow past the jobsite at reduced speeds to protect the work crew. For both of these functions, the flagger shall be clearly visible at all times to approaching traffic for a distance of at least 500 feet to permit proper response by motorists to the flagging instructions.

Flaggers shall be positioned on the shoulder away from all work vehicles and equipment. In addition, an escape route shall be planned, and color contrast between the flagger's protective garment and background shall be maintained. Flaggers shall stay back from the working area or the nearest vehicle 335 feet or more.

Flaggers utilized on any operation shall have current certification (i.e., initial training when hired and then refresher training every two years thereafter). Required flagger equipment consists of ANSI-approved hard hat, retroreflective vests, STOP/SLOW paddle, and certification card and sticker. For nighttime operations, a flashlight with red cone shall also be used.

No personal cell phones, stereo headphones, video games, or other distractions shall be in use while flagging. Only Cabinet-issued communication equipment shall be allowed.

All Cabinet employees engaged in flagging procedures shall be trained by the Division of Employee Safety and Health.

- **]Middle Flagger**—A middle flagger shall be used when two end flaggers cannot see each other due to terrain factors or long strings of work equipment. The middle flagger, when used, will be in charge and in control of traffic flow through the jobsite. At times, it may be necessary to designate a leader when more than one middle flagger is used.

  A middle flagger shall be used anytime carriage-type heavy equipment swings into an open travel lane or the path of motorists or pedestrians. Typically cranes, drotts, bantams, etc., have a tail swing that can intrude into paths used by the public or workers. The tail swing radius shall be protected by barricades, cones, or a middle flagger. The carriage equipment operator shall not use two-way radios to eliminate use of a middle flagger. A middle flagger provides instant communication, coordinates traffic flow, recognizes an impending hazard, and responds to prevent the hazard.

Middle Flagger Signals—To stop traffic on the left, the middle flagger shall hold the paddle or flag in the left hand and raise and point it in the direction of the end flagger on the left. The middle flagger shall maintain the paddle or flag in the left hand and use the right hand to motion traffic on the right through the jobsite.

To stop traffic on the right, the middle flagger shall follow the same procedure described above except the end flagger on the right will be signaled. The paddle or flag shall be in the right hand, and the left hand will be used to motion traffic on the left through the jobsite.

- **Retroreflective Vests**—Retroreflective vests are required on all flaggers.

- **Sign Paddles**—Sign paddles shall be at least 18 inches wide with letters at least 6 inches high. A rigid handle shall be provided. This combination sign may be fabricated from sheet metal or other semi-rigid material. The background of the STOP face shall be red with white letters and border. The background of the SLOW face shall be orange with black letters and border. When read at night, the STOP face shall be reflectorized red with white reflectorized letters and border, and the SLOW face shall be reflectorized orange with black letters and border.

- **Flags**—Flags used for signaling purposes in emergency situations or spot locations shall be a minimum of 24 inches x 24 inches, made of a good grade of red material, and securely fastened to a staff approximately 3 feet in length. The free edge shall be weighted to ensure that the flags will hang vertically, even in high winds.

16.5 TRAFFIC-CONTROL METHODS

- **Two-Way Radios**—Using Cabinet-approved two-way radios is the preferred method of communication between flaggers. The system shall be powerful enough for flaggers to clearly communicate without interference or fadeout.

- **Pilot Truck**—The pilot truck method provides for smooth traffic flow when the end flaggers cannot observe each other. This method may be used in light or moderate traffic flow situations. A pickup truck or a vehicle equipped with a strobe light and a tailgate-mounted sign reading PILOT TRUCK—FOLLOW ME is required. The pilot truck will guide the traffic the first flagger has stopped to the second flagger at the other end. Once a flagger's traffic has left with the pilot truck, all other oncoming vehicles shall be stopped. After delivering traffic to the other flagger, the pilot truck shall then guide this flagger's traffic back to the other flagger.

NOTE: Equipment utilized on this type of jobsite shall, as much as possible, remain out of the open traffic lane.

- **Pass-the-Flag**—This method provides for adequate traffic control in moderate and heavy traffic flow situations. A red cloth or other designated object is passed from the flagger whose traffic has been stopped to the last motorist in line, who is instructed by the flagger to give the red cloth or object to the flagger at the other end of the jobsite. After the last motorist has left the flagging station, all other oncoming traffic shall be stopped. The flagger at the other end of the jobsite, upon receiving the red cloth or other object, shall then proceed in the same manner described previously. If a flagger has not received the cloth or object within a reasonable amount of time, the flagger shall make an effort to determine what the problem is.

16.6 TYPICAL JOB PERFORMED

It is impossible to describe in this manual the traffic control methods for all jobs performed by the Cabinet. Therefore, only those jobs that are of usual nature will be described.

- **Pothole Patching**—The work location, degree of work involved, sight distance, traffic volume, traffic speed, and road character shall determine what traffic control operation will be necessary in each county/district. The supervisors shall be responsible for their crews' compliance with this KYTC policy.

1. Stationary

- Work operations performed in dangerous locations (bridges, cuts, high-accident areas, high-speed/high-volume highways) or where heavy workload activities are expected shall utilize a full lane closure (stationary signage, coned closed lane, and flaggers) for maximum protection. Typically work on Kentucky highways does not involve low-volume/low-speed traffic, and adequate sight distance is difficult to maintain. Most such work operations are considered stationary work zones.

2. Moving

- Brief, frequently moving work operations performed where flaggers can move along with the work shall utilize stationary warning signs. Work-zone limits shall be kept within 2 miles.

- Moving work operations of a fast-moving nature where stationary signage is not feasible shall utilize vehicle-mounted signage on each vehicle. All moving operations shall utilize escort vehicles to provide adequate sight distance and notification to motorists of the work activity. See **Escort Vehicles, page 16-12.**

- A traffic observer or lookout shall be positioned to continually watch traffic and warn workers whenever trouble is anticipated.

Forewarning and sight distance shall be properly maintained on either stationary or moving pothole-patching work operations.

Both operations may require additional signage, channelizing devices, attenuators, escorts, arrow panels, high-intensity lights, and/or police participation to maintain a safe work zone.

Each worker shall have a planned escape route.

All workers shall wear a flagger's vest and hard hat.

♦ **Litter Pickup**—As it is not practical to utilize flaggers in this operation, it is mandatory that vehicles utilized on this operation remain off the roadway whenever possible. If there is not enough shoulder to allow for this, the driver shall park at the nearest off-the-roadway location. The employees picking up trash shall work toward the truck. These employees shall wear retroreflective vests. The vehicle utilized in this operation shall have a strobe light.

♦ **Guardrail Repair**—If the guardrail is located extremely close to the roadway, it will be necessary to have a normal lane closure with flaggers utilized for traffic control. In other situations, there shall be appropriate warning signs with a red flag affixed or a red cone placed near them and the work area delineated with traffic cones. All employees shall wear retroreflective vests.

♦ **Cutting Brush**—Vehicles used in cutting brush shall be parked off the roadway whenever possible. If the vehicle cannot be parked completely off the traveled portion of the roadway, normal traffic control procedures including warning signs and flaggers shall be utilized. If the truck can be parked off the traveled portion of the roadway, an appropriate sign may be displayed (red flag affixed or red cone near it). All employees shall wear retroreflective vests.

Particular care should be taken by employees when cutting brush that they are not working near other employees so as to create a hazard.

Employees shall wear required personal protective equipment during brush-cutting operations. It is the supervisor's responsibility to obtain and ensure the use of required personal protective equipment.

When loading brush on vehicles, a red flag shall be affixed to the rearmost portion of the brush that extends beyond the tailgate section. The load of brush shall be secured in such a manner so as not to be a hazard to the traveling public.

The feeding operator and all personnel working within 20 feet of brush-chipping equipment shall wear approved eye and hearing protection.

Loose clothing shall not be worn around running machinery or equipment where entanglement can occur.

- **Shouldering Operations with Motor Graders**—If operations are slow-moving, normal warning signs and flagging procedures shall be utilized.

  If the shouldering operations are fast-moving, the use of normal flagging procedures is not practical. In this case, an appropriate warning sign shall be utilized on each end of the work area (a red flag will be affixed or red cone placed near it).

  As flaggers cannot be utilized, this operation shall have a rear escort vehicle with a strobe light and a tailgate-mounted sign with the message ROAD MACHINERY AHEAD. This vehicle shall remain approximately 500 feet behind the shouldering operation. When the grader is operated over a hill or in a curve, the driver of the escort vehicle shall use sound judgment in remaining in a location visible to traffic to provide warning. The escort vehicle shall be in compliance with **Escort Vehicles, p. 16-12.**

- **Ditching Operations**—Normal flagging and warning-sign procedures shall be utilized. It is desirable that a third flagger be utilized to safely direct dump trucks to and from the vicinity of the operation.

- **Backfilling**—During the dumping of material along the side of the road, the operation shall be properly signed, and flaggers shall be utilized.

- **Paving Operations**—Paving operations are slow-moving and shall utilize normal warning signs and flagger traffic-control procedures.

  A dry-chemical fire extinguisher shall be available on motorized paving machines.

Employees shall exercise extreme caution when working on or near the center line.

- **Bridge Construction, Inspection, and Maintenance**—When working on structures where an employee could fall into a waterway, employees shall wear Coast Guard-approved life jackets. Life jackets are not necessary if a fall-arrest system that incorporates 100 percent tie-off is used. When a fall of 4 feet or more is possible, an ANSI-approved harness and lanyard shall be used.

  At least one manned lifesaving skiff with a buoy and 90 feet of line shall be immediately available at locations where employees are working over or adjacent to water.

  Employees shall observe general safety rules as stated in **Chapter 8, Personal Protective Equipment.**

  Employees cutting or welding on galvanized material (such as some types of guardrails) or personnel engaged in sandblasting operations shall be required to wear an air-line respirator to be used with an approved-type air compressor.

- **Roadside Spraying or Fertilizing, Etc.**—The nature of this job, being slow-moving, creates a hazard to both the crew and public. This operation requires several safeguards to be taken.

  - All persons who handle, load, mix, or apply pesticides shall be licensed and certified by the Kentucky Department of Agriculture.

  - The applicator shall comply with the personal protective equipment (PPE) requirements shown on the pesticide label. The minimum PPE required for all pesticide applications is long pants, long-sleeved shirt, shoes, and socks.

  - When spraying or fertilizing on a two-lane highway, the sprayer unit shall have a strobe light and a tailgate-mounted sign approximating CAUTION—SPRAYING OPERATIONS. A rear escort vehicle is also recommended.

  - When working from a travel lane on a multilane highway, the hydroseeder or spray truck shall be equipped with appropriate warning signs and flashing lights. An escort vehicle shall be equipped with a truck-mounted attenuator and be in compliance with **Chapter 14, Section 14.15.**

- The operator shall frequently check the arrow board to ensure the bulbs are operative.

- The spraying or hydroseeder unit shall have long-handled red flags (six-foot staffs), mounted in a conspicuous location.

- Sprayer and hydroseeder units, other than those mounted on pickup trucks, shall be provided an adequate means of communication between the driver and the operator in rear.

- Face shields or goggles approved for these types of operations and chemical-resistant gloves, aprons, or coveralls shall be used by employees while mixing pesticides.

- Spraying operations shall not be conducted on extremely windy days. It is the supervisor's responsibility to determine if weather conditions will permit the spraying operation to be conducted safely. If spray solution comes in contact with eyes, the employee shall wash immediately with clean water or eyewash solution.

- Crews shall frequently check nozzles and hoses for leakage and deterioration.

- Spraying operations shall be conducted within guidelines prescribed by the Division of Maintenance.

- Adequate guardrailing shall be provided on units if employees are exposed to falling hazards.

♦ **Snow- and Ice-Removal Operations**—Vehicles equipped with salt spreaders shall have warning lights.

Front-mounted snowplows shall have a reflective guide bar attached to each corner of plow. Headlights and warning lights shall be used for both daytime and nighttime operations.

♦ **Tractor Mowing**—Mowers shall be equipped with two red flags on 6-foot staffs, the triangular SLOW-MOVING VEHICLE sign, and flashing light(s).

Mower operations shall be conducted between appropriate signage. The END MOWING ZONE sign shall not be placed more than 2 miles from the BEGIN MOWING ZONE or MOWING ZONE sign. Additional MOWING ZONE signs may be placed every 2 miles to extend the mowing zone.

The mower arm shall not be permitted to reach over the roadway at any time while mowing the center island or median.

All tractors used on highway-mowing operations shall have a rearview mirror mounted on the left side.

Mower operators shall take extra precautions when operating near crests of hills, excavations, or other areas where the machine may tip or drop off. Operators shall make proper observations before backing or turning around their equipment.

Before attempting to make repairs to the cutting blade or knife sections or before cleaning the blade, the operator shall shut off the mower engine, place in the neutral position the lever activating the knife blades, and block the wheels of the machine to keep it from rolling, if necessary.

If the mower is equipped with a bushhog, it shall be equipped with protective chains or guard to prevent throwing objects. A steel mesh screen shall be mounted on the tractor between the operator and the bushhog. Other mowers operating behind a bushhog shall stay at least 300 feet behind.

Sickle blades shall be adjusted to allow the blade to swing back when striking a stationary object.

During the first mowing operation of the season, the foreman or supervisor shall determine which slopes shall or shall not be mowed. Mowing operations shall not be performed on slopes greater than 3/1.

- **Hand Lawn Mowers**—Before refueling, the operator shall ensure the motor has sufficiently cooled. When changing or sharpening the blade or doing any repair work under the mower, the operator shall shut off the engine and disconnect the spark plug wire.

  Grass discharge shall not be blown toward other personnel.

- **Traffic-Crew Operations**

  - **Center-line Striping**

    The center-line striping operation on two-lane highways shall be protected with a rear escort vehicle. A front escort vehicle is optional. The rear escort vehicle shall have a strobe light, or a similar device, and a tailgate-mounted warning sign with the message approximating SLOW VEHICLE AHEAD. The rear escort vehicle shall remain approximately 500 feet behind the striping operation at all times.

If used, the front escort vehicle shall have a strobe light, or a similar device, and a sign approximating PASS WITH CAUTION. The driver of the front escort vehicle shall, at all times, be positioned to offer maximum warning for oncoming motorists.

Truck-mounted attenuators shall be utilized in accordance with **Chapter 14, Section 14.15**.

All escort vehicles shall be in compliance with **Escort Vehicles, p. 16-12.**

The paint-mixing truck shall park at a predetermined location and not be part of the moving striping operation. On highways of four lanes or greater, a truck-mounted attenuator with a rear-mounted flashing arrow shall be utilized as a rear escort vehicle.

Two 20-ABC fire extinguishers shall be provided on vehicles used for mixing paint or paint striping.

- **Thermoplastic-Striping Operations**

  If the equipment must be in the traveled portion of the roadway, adequate warning lights, signage, and number of flaggers shall be utilized. Also, since this is a stationary job, the work area shall be protected by a series of cones.

  Employees engaged in mixture operations involving glass beads shall wear approved eye protection.

  All waste products from this operation, such as leftover paint or flushed line residue, shall be collected and disposed of through the hazardous waste program.

- **Traffic-Signal Work**

  If the equipment must be in the traveled portion of the roadway, adequate warning lights, signage, and number of flaggers shall be utilized. Also, the work vehicle shall be protected by a series of cones on all stationary jobs.
  Overhead work from the bucket shall be performed within the coned work area only. Employees shall not work from the bucket over an unprotected open lane.

  Platforms on aerial lifts (autocranes, levelator trucks, etc.) shall not be operated in excess of the posted capacity of the platform. Adequate guardrailing and fall protection shall be provided if employees are working at heights above 4 feet.

The operator shall tie off a lanyard to the equipment anchor point and ANSI-approved harness dorsal D-ring.

Two or more individuals should be on the scene at bucket-truck operations.

Bucket-truck work shall also comply with **Chapter 14, Section 14.14.**

- **Sign Installation Crew**

If the equipment must be in the traveled portion of the roadway, adequate warning lights, signage, and number of flaggers shall be utilized. Also, the work vehicle shall be protected by a series of cones on all stationary jobs.

Personnel driving sign posts shall wear eye protection.

♦ **Survey Crews**—When Cabinet personnel are surveying within right-of-way limits, a sign SURVEY CREW shall be utilized at each end of the jobsite. The lead sign shall have a red flag affixed to it or a red cone placed next to it. ONE-LANE ROAD AHEAD and FLAGGERS AHEAD signs shall be used if there is a lane closure and flaggers are utilized.

♦ **Escort Vehicles (Shadow Vehicles)**—Front or rear escort vehicles are used to maximize safety for work crews and the traveling public. Generally, moving jobs are fast-moving; therefore, flaggers and stationary signing are impractical. A typical moving work site may include, but not be limited to, traffic-lane striping, roadside spraying, vac-all sweeping, shoulder operations with a grader, following wide loads, or some mowing operations. Escorts provide advance warning to the traveling public and protection to the work vehicles. Where hills or curves eliminate the motorist's sight distance to the work vehicle, an escort vehicle shall be used.
The escort shall follow the moving work site at a safe distance, usually 500 feet. However, the distance will vary according to type of road, speed of traffic, volume of traffic, speed of work vehicle(s), etc.

Escort drivers shall constantly remain alert and aware of their vehicles' positioning and of the motorists' vehicles. They shall vary their speeds and hold back on curves and hillcrests to give more warning to motorists. They may have to speed up to regain the proper distance from work vehicles.

All escort vehicles shall have appropriate rear-mounted warning signs to properly advise motorists of hazards ahead.

Escorts shall be equipped with flashing or strobe lights when operating on two-lane, two-way roads. Flags may be used to increase visibility.

On multilane highways, escorts may be equipped with a variety of safety devices such as truck-mounted attenuators, arrow boards, strobe lights, and flags.

Arrow panels used on multilane highways shall, as a minimum, be Type B, with the size of 5 feet x 2 1/2 feet. The Cabinet, however, recommends that arrow panels 4 feet x 8 feet be used whenever possible. Arrow panels shall be in caution mode when operating from the shoulder or emergency strip.

Truck-mounted attenuators utilized on escort vehicles shall be in compliance with **Chapter 14, Section 14.15**.

The escort and work vehicle(s) shall have two-way radio contact.

Escort vehicles shall not be used to transport flammable materials/liquids.

Chapter 17
BLASTING (EXPLOSIVES)

17.1 GENERAL PROVISIONS

Only licensed blasters shall be utilized on operations. The license shall be valid (renewed annually) and obtained from the Department of Mines and Minerals. A blaster is a person who decides:

- Hole size, spacing, or depth
- Total quantity of explosives
- Quantity of explosives in each hole
- Timing delays to be used

The blaster shall be present when the charge is detonated and shall physically detonate the charge or give the order to detonate the charge.

The display of adequate signs warning against the use of mobile radio transmitters shall be provided on all roads within 1,000 feet of blasting operations. The signs shall be approximate 42 inches x 36 inches, with the message TURN OFF TWO-WAY RADIO.

Flaggers shall be safely stationed on highways that pass through danger zones to stop traffic during blasting operations.

All blasting operations shall be suspended, and persons shall be removed from the blasting area during the approach and progress of an electrical storm.

17.2 STORAGE OF EXPLOSIVES

Blasting caps, electric blasting caps, detonating primers, and primed cartridges shall not be stored in the same magazine with other explosives or blasting agents.

Temporary storage and storage of daily supplies of explosives shall be in approved portable magazines, which should be weatherproof, fire-resistant, and preferably bullet-resistant and shall be equipped with a substantial lock. For fixed locations a post foundation will suffice. Wooden-frame structures shall be covered with 24-gauge sheet iron extended 6 inches into the ground for fire protection and shall be provided with a minimum of 5 inches of sand filling inside all four walls.

Portable magazines for smaller quantities shall be toolbox-type of required capacity, built of 2-inch hardwood planks or of sheathing with 5-inch sand-filled walls. Either type shall also be covered with 24-gauge sheet iron and shall be painted red with the word EXPLOSIVES in readable white letters.

Chapter 17
BLASTING (EXPLOSIVES)

RULES FOR EXPLOSIVES, SUPPLY MAGAZINES, AND BLASTING ACCESSORIES

- An EXPLOSIVES sign shall be posted in white lettering on red background.

- Explosives shall be stored in a separate magazine from blasting supplies and accessories such as blasting caps, electric blasting caps, detonating primers, and flammables. Sparking metal tools or other sparking metal implements shall not be stored in any magazine.

- Packages containing explosives shall be handled carefully. Do not drop, throw, slide along the floor, or otherwise handle explosives roughly in any manner. Packages shall not be stacked higher than eaves. Metal hooks shall not be used in handling packages of explosives.

- Dynamite cases shall be stored flat, top side up. Black powder kegs shall be stored on ends (bungs down) or on sides (seams down). Corresponding grades and brands shall be stored together in such a manner that brand and grade marks will show so as to be easily counted and checked and so that the oldest stock can be readily seen.

- The oldest stock shall always be shipped, delivered, or used first.

- Employees shall not open packages, pack, or repack explosives within a distance of 50 feet of magazine.

- Employees shall not use sparking metal tools to open or close packages of explosives. Metallic slitters may be used to open fiberboard cases, provided the metallic slitter does not come in contact with the metallic fasteners of the case.

- Employees shall not have loose explosives or open packages of explosives in magazine.

- If artificial light is needed, use only a safety flashlight or electric lantern.

- Employees shall not smoke; carry matches, lighters, or other flame-producing devices; or allow others to do so while within 50 feet of magazine.

- Employees shall not allow shooting or allow anyone to have firearms or cartridges in or near any magazine.

- Employees shall keep interior of magazine clean and keep area for 25 feet around magazine clear of dry leaves, grass, undergrowth, trash, and other debris to prevent fires.
- If a leak develops in magazine roof or wall, employees shall repair it at once.

- Employees shall not allow unauthorized persons in or near magazine.

- Employees shall keep careful watch for broken, leaky, or defective packages. If any are received, employees are to put them to one side in magazine and send to the manufacturer a detailed report giving probable cause.

- Employees shall not use emptied dynamite cases in or around magazine.

- Employees shall keep door of magazine closed and securely locked, except when opened for transacting business.

NOTE: Safety fuse and detonating cord may be stored in magazine with explosives. Do not store safety fuses in hot or damp places.

17.3 MAGAZINE IDENTIFICATION

Magazines shall have identification tags. Tags shall be approximately 3 inches long by 2 inches wide and shall be lettered or painted directly onto magazine or attached so that normal use and weather will not render tag illegible.

The tag shall provide the following information:

- Name of owner
- Address
- Name of person responsible for security of magazine
- Telephone number

17.4 TRANSPORTATION OF EXPLOSIVES

No person shall smoke, carry matches, or use any other flame-producing device nor carry firearms or loaded cartridges while in or near a motor vehicle or conveyance transporting explosives.

Blasting caps shall not be transported in same vehicle with other explosives.

Vehicles transporting explosives shall be in good mechanical condition.

Open-bodied trucks shall have sides and ends high enough to prevent explosives from falling off. The explosives shall be stored in an approved portable magazine (see **Section 17.2**).

All vehicles used for transporting explosives shall have tight floors. Any exposed spark-producing metal on the inside of the body shall be covered with wood or other nonsparking material to prevent contact with containers of explosives.

Vehicles transporting explosives shall have placards on the front, rear, and both sides with the word EXPLOSIVES in red letters not less than 4 inches in height on white background.

Vehicles used for transporting explosives shall have at least one fire extinguisher with a 10-ABC rating (effective on all types of fires).

Motor vehicles carrying explosives shall not be taken into garages or shops for repair or servicing.

Motor vehicles transporting explosives shall not be left unattended.

Only properly trained personnel shall transport explosives.